The **future** of **interactive** entertainment

UK edition September 1997 **£3.50** ¥2,100 ®

EDGE

PlayStation ■ Saturn ■ Nintendo 64 ■ PC ■ Arcade ■ Net ■ Multimedia

Blade Runner

Turning the sci-fi movie classic into a videogame legend – an exclusive report

The evolution of 3D

From Battlezone to Quake 2: the rise and rise of 3D games

Sid Meier

The master of strategy gaming speaks out

Inside Sony of Japan

Edge talks to the men behind the world's most popular console

After so many efforts by designers to emulate Blade Runner's dystopian vision of a Los Angeles of the future, the true videogame interpretation is finally happening. **Edge** goes behind the scenes at Westwood Studios in Las Vegas for an exclusive look at this potential Christmas blockbuster

Issue forty-nine

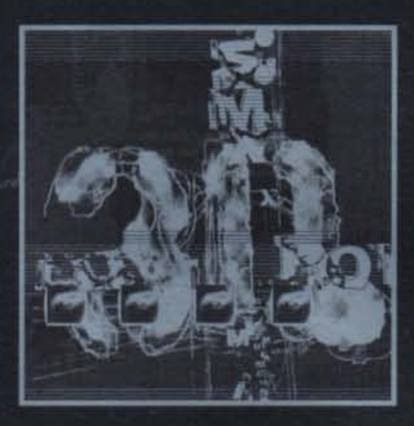
Future Publishing

September

49







Advanced gameplay should be the habitual pursuit of games designers the world over, yet rightly or wrongly, the majority of innovations made in the videogaming arena are cosmetically driven. Without them, just how far would gaming have progressed beyond *Space Invaders*?

For years this amounted to pushing back the boundaries of bitmapped 2D so that colours could be added (remember the coloured plastic strips that used to simulate colour on old coin-op monitors?), introducing scrolling parallax backgrounds, and logical progressions such as sprite scaling (Sega) and pseudo-3D screen manipulation as championed by Nintendo with its Mode 7 trickery.

In the past four years 3D graphics have monopolised developers' time and with it taken on the biggest challenge of all – mimicking reality.

Originating with the efforts of early vector graphics coin-ops and truly kicked off by the huge leaps made by the designers of landmark polygon achievements such as *Virtua Fighter*, 3D graphics have rapidly become the currency by which most interactive entertainment is valued.

This issue **Edge** presents an in-depth analysis of the challenges facing videogame developers, and dissects the technology now facilitating giant leaps in realtime visualisation.

The future is almost here...

Printed in the UK
© Future Publishing 1997
Voted magazine of the year at INDIN industry awards
ABC (Audit Bureau of Circulation)

Contacts

Editorial

Future Publishing
30 Monmouth Street
Bath, BANES BA1 2BW

Telephone 01225 442244
Fax 01225 732274
email: edge@futurenet.co.uk

Subscriptions

Future Publishing Ltd
FREEPOST BS4900, Somerton
Somerset TA11 7BR
Customer Services:
01225 822510
Customer Order Line:
01225 822511
Fax: 01458 274378

People on Edge

Jason Brookes editor
Tony Mott associate editor
Simon Cox deputy editor
Keith Stuart a mere hologram
João Sanches writer
Terry Stokes art editor
Craig Brooks deputy art editor
Nicolas di Costanzo Tokyo bureau

Joanna Paget advertising manager
Jane Geddes recruitment/classifieds
0171 447 3309
Advertising fax 0171 447 3399
Rebecca Stables production coordinator
Richard Gingell production manager
Production fax 01225 732293
Sarah Orchard ad design
Janet Anderson production controller
Judith Green group prod manager
Jon Moore pre-press services coordinator
Simon Windsor colour scanning
Mark Gover, **Jason Titley**,
Oliver Gibbs pre-press services
Mark Williams foreign licenses
0171 331 3924
Chris Power publisher
Greg Ingham managing director
Nick Alexander chairman

Colour reproduction

Colourworks Repro, Bristol
Phoenix Repro, Bath

Print

Cradley Print, Warley, West Midlands
Edge is printed on Royal Press 90gsm

Production of Edge

Hardware Power Macintosh, PowerBook, Ilsi by Apple, P5-200 PC by Gateway
Software *QuarkXPress*, Adobe *Photoshop*, Aldus *FreeHand*, Pixar *Typestry*, Nisus and Microsoft *Word*
Typography (Adobe®)

TPCavalier Medium/**Extrabold**
Arbitrary Regular/**bold**
Formata light/**regular/medium/bold**
Impact & Vectora light/**bold/black**

Fifth colours: Pantone® 804/8360

Cover

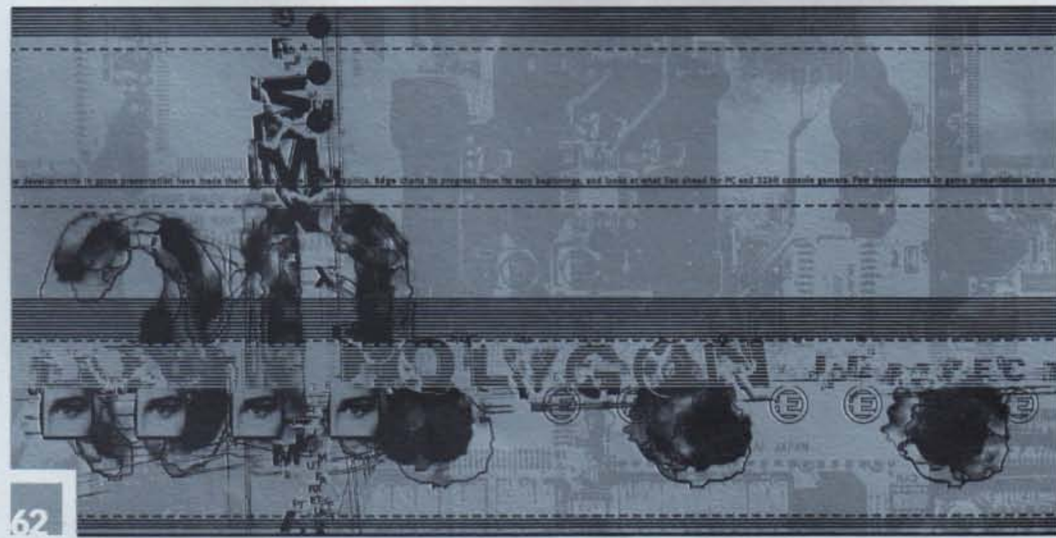
Blade Runner © Time Warner 1983


Panzer Dragoon Saga
42


Sony Computer Entertainment HQ
46

features


Blade Runner
52



62

CORRECTION The cover artwork of **Edge** 47 was credited as being the sole work of Matt Stubbington. **Edge** apologises to lead artist Alan Johnson and artists Greg Omelchuck and Joe Lee of Iguana, who were also responsible for its creation



Saturn 2





Luscious Jackson

Cyderspace website

'Cosplay' fans at JAFCON

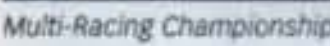


Powerslide


Judge Dredd


Colony Wars




Multi-Racing Championship


Last Bronx


Dark Earth



Sid Meier




CGI from *Conker's Quest*

CGI from *Messiah*

Armadillo Racing




Leaderboard



F1 Racing

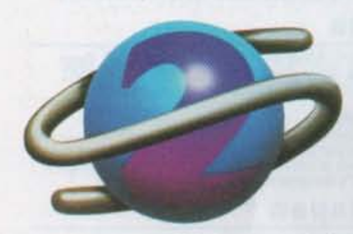
regulars





Cutting Edge

The latest news from the world of interactive entertainment



Will Sega retain the Saturn name for its successor? It's doubtful

SEGA OUSTS 3DFX FROM SATURN 2 PROJECT

Sega has dramatically terminated its Saturn 2 development contract with 3Dfx. The leading graphics technology company has been in the process of designing a proprietary 3D chipset for the console since March of this year - a process which was being funded by Sega.

According to 3Dfx's marketing manager, **Chris Kramer**, the company was officially notified by Bernie Stolar, VP of Sega of America, by telephone on Tuesday, July 22, 1997. Kramer told **Edge**, '3Dfx was disappointed, and somewhat confused by Sega's decision. Our contract with Sega was considered to be gospel right up until we received the call.'

Although no official reason has been given for the cancellation, 3Dfx has asserted that it was nothing to do with the performance or the cost of technology: a statement which Sega has described as 'fair'.

The announcement raises a number of questions both

'3DFX WAS DISAPPOINTED, AND SOMEWHAT CONFUSED BY SEGA'S DECISION. OUR CONTRACT WITH SEGA WAS CONSIDERED TO BE GOSPEL RIGHT UP UNTIL WE RECEIVED THE CALL'

about the console itself and about 3Dfx and its relationship with Sega. A recent press release from the jilted graphics-technology specialist hints that the split breaches the contract agreed between the two companies, and that it is exploring its options, 'including legal resource'. In other words 3Dfx is refusing to rule out the possibility of legal action – a possibility confirmed by Kramer, who has stated that lawyers are 'looking over the contracts and doing research.'

For its part, Sega is remaining tight-lipped about the affair – chiefly because it still hasn't officially announced the existence of the Saturn 2 project. The company admits it is aware 3Dfx is looking into the possibility of legal action, but claims not to be worried at the moment. A spokesman talking to the online version of **Edge**'s sister magazine, *Next Generation*, said, 'We'll take this one step at a time and try to work with them... We are still an investor in the company and that factor may play a role somewhere in the solution.' Indeed, Sega has invested $2m in 3Dfx along with the development costs of the chipset, a factor which may add an extra complication to any legal proceedings.

Also complicating matters is the three-year exclusivity clause which formed a major part of the original deal. This clause forbade 3Dfx from contributing towards any rival technology for the aforementioned period, but it is unclear whether the condition will remain binding now that the deal has fallen through. Again, 3Dfx claims that it is in discussion with its lawyers.

Although clearly shocked and disgruntled by the announcement, 3Dfx has been keen to play down the significance of the deal's collapse. In the company's press release, **Greg Ballard**, president and CEO, stated, 'We are disappointed with this notification, and believe that it is without legal justification. However, it is important to remember that Sega is only a fraction of our business, representing less than 10% of our projected 1998 revenue.'

Despite this apparently unperturbed demeanour, though, 3Dfx is no doubt more riled than it can admit. A link with Sega and the Saturn 2 project would have certainly increased the







Despite the support of many developers, including Psygnosis (*Wipeout 2097*, above, *F1*, left), 3Dfx has been rejected by Sega (far left). The question no one can answer is 'why?'







PCX2 versions of *Ultimate Race* (far left), *Powerslide* (left) and *Hardcore 4x4* demonstrate the power of VideoLogic's technology

prestige of the technology, and would also have been a significant blow to its rivals in the 3D acceleration market, most importantly VideoLogic.

It is VideoLogic's chipset technology which industry watchers are now linking with the Saturn 2. Ironically, rumours of a VideoLogic/Sega console project had surfaced a few months before the collapse of the 3Dfx/Sega deal (**E**44), but were dismissed as unfounded by Sega. At that time, both Sega and VideoLogic would only say that several options were being considered for the Saturn 2's graphics chipset and none had been definitely accepted.

Industry rumourmongers have not been put off, though. Some of **Edge**'s sources are now claiming that Saturn 2 development kits featuring VideoLogic's 'Highlander' technology are due to be shipped to software developers before the end of the year and that Sega is advising developers to begin working with the PowerVR SDK for the PC until full dev kits arrive.

Highlander is the codename for VideoLogic's next-generation AGP-compliant technology which apparently offers four times the performance of its existing PCX2-chipset. Like its predecessor, Highlander was to be aimed at the PC first, and then offered for arcade and console development, but there is no reason why Sega couldn't have secured the technology for its console first.

Just as **Edge** went to press, an interesting theory arose to explain Sega's mysterious cancellation of the 3Dfx chipset, and its apparent adoption of VideoLogic technology. Although Sega of America has consistently referred to the Saturn 2 (albeit behind closed doors) as the 'Black Belt project', Sega of Japan has been alluding to it under the monicker 'Dural'. It could be that the two departments have actually been designing their own Saturn sequel projects, each employing

EDGE'S SOURCES ARE NOW PREDICTING THAT SATURN 2 DEV KITS FEATURING VIDEOLOGIC'S HIGHLANDER TECHNOLOGY ARE DUE TO BE SHIPPED TO DEVELOPERS BEFORE THE END OF THE YEAR

different graphics chipsets: Japan going for the NEC-supported VideoLogic technology and America going for the home-grown 3Dfx option. It is possible that the two departments were in competition to design the better Saturn 2 prototype – a competition Japan may have won – hence the cancellation of 'Blackbelt' and in turn the abandonment of the 3Dfx deal.

Although it would appear that PowerVR may have finally won an important victory over its strong rival, the current round of Saturn 2 speculation should be taken with a handful of salt. While Sega itself remains reticent, nothing can be taken for granted as so many rumours and supposed facts have so far been proved groundless. As for 3Dfx, if the three-year exclusivity clause with Sega is indeed made null and void, it is unlikely this will be the company's last dalliance with the console market. **E**









As Voodoo is capable of generating 3D graphics of this standard, another console contract is almost certain



Star Fox 64 (right) and *Mario Kart 64* (above) are two of the fastest-selling titles in US videogame history



N64 STORMS AHEAD

Nintendo's *Star Fox 64* has become one of the fastest-selling titles in videogame history. The acclaimed 3D space shoot 'em up sold 300,000 copies in the first five days of its US launch, beating the 200,000 units previously achieved by *Super Mario 64* in its first week on sale, and is expected to reach the platinum million mark by the end of August, and double platinum by the end of the year.

In contrast, *Quake*, which is currently the best-selling PC title in US videogame sales history, has only achieved 600,000 sales in the ten months since its release.

Nintendo has warned of a possible product shortage later on in the year, despite a further shipment of 300,000 units already on its way to retailers to complement the initial 450,000 pre-orders placed before the June 30 launch.

This latest development is simply another successful occurrence in the blossoming story that is the US N64 push. As well as holding high positions in the sales charts with platinum-selling titles such as *Mario Kart 64* and *Super Mario 64*, Nintendo 64 titles have dominated the software rental sector. Since the machine's release, N64 games such as *Super Mario 64*, *Mario Kart 64*, and now *Star Fox 64* have held the top position in the charts compiled by the Video Software Dealers Association, going on to hold the top five positions for the last several weeks.



SM64 is another Nintendo platinum title, having sold a million copies within a few months of its release

Elsewhere in Nintendo news, Hiroshi Yamauchi, president of Nintendo Co. Ltd, recently announced in a Japanese newspaper interview that he would retire by the year 2000. Yamauchi, 69, has been in control of the company since he was elected to pick up the reins in 1949, taking it from a domestic playing cards manufacturer into a global videogame giant with sales worth $3.3 million and profits of $565 million (year ending March 31,1996).

The Nintendo president is still involved in every decision made by the company, and continues to defend these ferociously, such as the ongoing debate featuring the Japanese giant's decision to stick to cartridges as the storage medium for the Nintendo 64, regardless of the pressure from the software industry to adopt CDs.

As far as who might replace him, Yamauchi declared it too early to begin speculating on any individual, claiming that he first wants to see the 64DD succeed by revolutionising the gaming world. Minoru Arakawa, president of NOA, is one individual that has been mooted as his successor.



Hiroshi Yamauchi, president of NCL, has announced that he plans to retire by the year 2000

cutting edge cuttings

Super Mario 64 2 set for 64DD release

Super Mario 64's sequel is already in development, with the game set for a release as a 64DD title, a mid-to-late 1998 release date being likely for Japan. Details are currently scarce, but a simultaneous twoplayer option is believed to be in the plans for inclusion, allowing a second player to assume the role of Luigi.

Japanese tremors

Nintendo has recently re-released Jolt Pack-compatible versions of *Super Mario 64* and *Wave Race 64* in its home market. The Japanese company has not commented on whether it has plans to do the same in any other territory, although the decision is expected to depend on the success of the titles second time around.

Nintendo hits Paraguayan Pirates

Nintendo's continuing efforts to crack down on piracy have resulted in Nintendo of America joining forces with the Paraguayan government. The joint operation saw the seizure of illegal game-related products in Paraguay's Ciudad Del Este with a US street value of $2.6 million. Paraguay is one of Latin America's main piracy

THIRDPARTY N64 MODEM AND ARCADE DETAILS EMERGE

Continuing its support of Nintendo, which dates back to its close relationship with the company during the 16bit console era, Seta has developed a revolutionary modem cartridge for the N64 which allows players to engage in head-to-head play against any similarly equipped player anywhere in Japan.

Although the only game to take advantage of this service, *Morita Shogi*, is a Japanese chess-style affair, the possibilities for the system are obviously huge.

Until now, *Morita Shogi* players only had the choice of pitting their skills against the console's CPU, and as a result the game was aimed chiefly at the beginner and intermediate end of the market, with expert players preferring the real challenge of a human opponent.

With this N64 version, advanced players can now compete against others across Japan. *Shogi* participants can connect themselves to a nationwide network and play against any other competitor within the network. Furthermore, advice from Shogi masters can be downloaded, and the system will also display the 100 best players on a continuous basis.

Seta's cartridge promises to revolutionise the world of Shogi, but its the potential outside of this that proves . It should be possible to adapt the cartridge to play other genres, so that players could exchange RPG items or download maps by means of a worldwide network. The possibilities are very much in the hands of game developers.

As reported in last month's **Edge**, Seta's other current major involvement with Nintendo is its N64-based arcade board, entitled ALECK64. Following earlier console-related arcade outings such as Namco's PlayStation-friendly System 11 and Sega's Saturn-based ST-V board, further details have emerged.

An official announcement has yet to be made concerning which titles will be developed for the board, but one of Seta's N64 titles, *Rev Limit*, is rumoured to be one of the first to be released (Nintendo itself has recently assumed a significant development capacity in the title in order to improve it, and as a result the game's release has now been postponed until next year).

To develop on the ALECK64 board, programmers can start with the usual N64 development tools, and then take advantage of further library updates released regularly, which can also be used for developing on Nintendo's 64bit console.

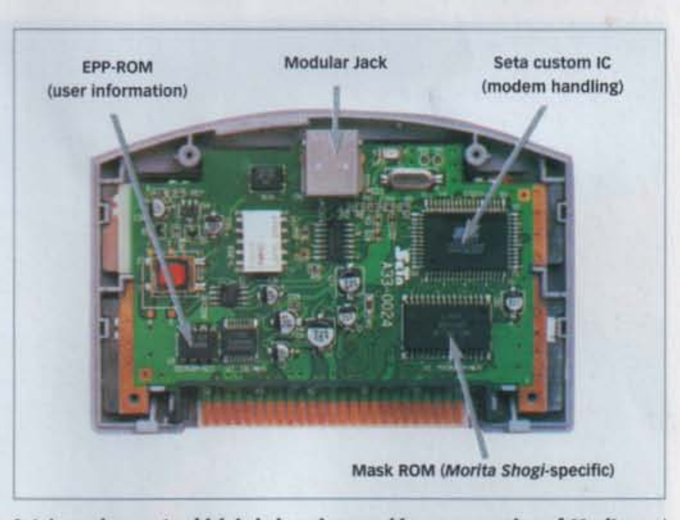


***Rev Limit* (above) is now a Nintendo project, and is expected to be one of the first releases for the ALECK64 (left)**

Seta plans to release two versions of the board: the 'Type-A' board will closely resemble an N64 but for a clocked-up CPU running at 125Mhz, and extra RAM capacity, while the 'Type-B' option will incorporate additional features such as improved sound capability, better sprite handling (1,000 sprites simultaneous display), and dedicated 2D circuits.

Thirdparties have yet to officially announce their involvement with ALECK64, but their recruitment only began at the end of June. Nevertheless, Seta is still confident it will ship 10,000 units by the end of the year.





Seta's modem cart, which is being pioneered in a new version of *Morita Shogi* in Japan, could bring about a whole new wave a multiplayer gaming

centres for counterfeit videogames, shipping thousands of illegal goods each year to South American countries.

64DD set for $120-equivalent price in Japan

In a recent interview, Shigeru Miyamoto revealed that the Nintendo 64 64DD add-on will sell for the equivalent of around $120 when it is released in Japan. No announcement has been made concerning a price point for the unit when it eventually reaches the west.

Namco finally confirms N64 game plan

Namco has announced that *Famistar 64* will be its first N64 title. Despite the cute graphics, Namco claims that this will be a realistic baseball game, using the joypad's analogue controller to offer better accuracy in terms of the characters' movements. The game will also allow players to create their own custom teams and store them on a memory card. Although Namco, famously responsible for the *Ridge Racer* series, has often been linked with a driving game for the N64, no firm details have yet surfaced.

Dungeon keeps growing

Bullfrog has announced that it is hard at work on an expansion pack for its terror-filled masterpiece, *Dungeon Keeper*, to be released in time for Christmas. The pack will feature new creatures, new levels and scenarios, as well as new general game features. At the time of writing, however, no details of the latter had been issued.

continued

NEC JOINS INTEL'S ARCADE STRATEGY



Electronics giant NEC has joined Intel's Open Arcade Architecture forum – a group of companies dedicated to promoting the use of PC hardware and software in the arcade (see news, **E**46). The forum, announced in July, also counts Namco, Eidos and Sony among its members, and hopes to hold regular meetings where developers and hardware companies can get together and discuss possible arcade projects.

VideoLogic, whose graphics technology is distributed by NEC, has also joined the forum, which should mean an enhanced version of the company's PCX2 hardware (see **E**45) will soon find its way into OAA-backed coin-ops. Up until this point Intel had only been using 3Dfx Obsidian-class processors in its own arcade demos. However, Intel's OAA blueprint – its vision of how powerful a PC-based arcade machine should be – does not mention which specific 3D-acceleration hardware a PC coin-op should use. It does, however, put forward minimum performance requirements (400,000 polys per second frame rate, 40 MPixels per second fill rate), which VideoLogic's graphics hardware can certainly meet.

Although NEC and VideoLogic have only just joined the OAA Forum, it is expected that coin-op titles employing the latter company's technology will be involved in arcade tests by the end of the year. Indeed, Kalisto is due to make an announcement at ECTS about a new version of its excellent PowerVR title, *Ultimate Race*, which could well be an OAA conversion of the game, which would no doubt employ a PowerVR rather than 3Dfx graphics accelerator, due to Kalisto's links with VideoLogic. With or without an arcade version of *Ultimate Race*, entry into the OAA forum should prove a significant boost to VideoLogic. The company has so far found it hard to secure a position in the arcade market – something a PC-based coin-op initiative should address.

Importantly, this boost comes at a time when the company is enjoying increased patronage on the home PC side of its business. At this year's E3, 30 new PowerVR PCX2-compatible titles were announced, including *Tomb Raider 2*, *Wipeout 2097*, *Terracide* and *GL Quake*, many of which are PowerVR extreme (ie specifically coded to take advantage of the chipset's proprietary features). Although 3Dfx still has the edge in terms of developer support, it is clear that the battle to dominate the 3D acceleration market is far from over. **E**





PCX2 versions of *Wipeout 2097* (above) and *Terracide* (top) were both shown off at this year's E3





***Ultimate Race* (left) may appear in a coin-op form before the year is out. PCX2 *Tomb Raider 2* (above) will offer a high frame rate even at 800x600**

continued

Virtual On goes PowerVR
Sega has announced that it is developing a PC version of its coin-op robot fighting game, *Virtual On*, to be compatible with NEC's PowerVR chipset. Due for release in October, it is expected to be followed by PowerVR-compatible conversions of other Sega coin-op hits, possibly including *Manx TT* and a number of beat 'em ups.

NFL's not in the game
It appears that *John Madden 64* will not include the NFL licence, making it the first game in the series, which began on the Mega Drive in 1992, not to have secured the all-important monicker. Electronic Arts has signed the NFLPA licence, which means that players' names will be included, but not in their respective teams.

Konami's console switch
In a move that is sure to delight Sega fans, Konami has revealed that it intends to convert all of its PlayStation hits to the Saturn. *Castlevania X* is the first title planned, for which Konami is promising unique Saturn-specific features. RPG *Suikoden* and strategy-RPG *Vandal-Hearts* are the other two titles currently mooted for translation.

Game Boy still going strong
Nintendo has ramped up its Game Boy production from 900,000 units a month to one million following strong sales. Although rumours persist that the technology for Nintendo's next handheld unit is finished (and is in the process of having games developed for it), it looks like the company is keeping the 8bit faith.

continued

ECTS '97 ATTRACTS BIG GUNS

All signs point to 1997's ECTS being the biggest and most impressive to date

This year's European Computer Trade show, taking place from September 7-9 at Olympia in London, is being touted by its organisers as the biggest yet. Over 180 exhibitors are currently signed up to appear, including Sony, Nintendo, Psygnosis, Eidos and Electronic Arts. The two giants of the computer industry, Microsoft and Intel, are also scheduled to attend the event, where they are likely to reveal further details of their joint arcade plans and burgeoning Open Arcade Architecture initiative.

New Nintendo 64 titles such as DMA's *Body Harvest* and Rare's *Banjo-Kazooie* will no doubt draw large crowds at the show, as will demos of other premium UK N64 releases such as *GoldenEye* and *Star Fox 64*.

However, Nintendo's superconsole will be up against long-awaited PC titles such as id's *Quake 2* and Bullfrog's *Populous 3*, as well as a number of original projects, including Rage's *Incoming* and Westwood's much-anticipated *Blade Runner* (see p52).

With the PlayStation currently riding high in the consumer-electronics market, though, Sony's usually prominent presence will almost certainly provide the largest focus of attention. *Tomb Raider 2*, *Resident Evil 2*, *Crash Bandicoot 2* and *Final Fantasy VII* are all high-profile sequels receiving their first European airing here, while *Time Crisis* and Activision's *Nuclear Strike* will also see the light of day.

As well as software developers, publishers and dodgy educational infotainment companies showing off their usual range of interactive learning titles featuring characters such as Alfie the naughty alphabet monkey, ECTS will boast its own televised news network and a series of keynote speakers. A government minister will even be present this year in the form of Barbara Roche, Parliamentary Under-Secretary of State for small firms. It seems that Tony Blair has not yet appointed a Minister of Videogaming.

SEGA'S FRENCH CONNECTION

Adeline, the French development studio set up five years ago by a group of programmers and ex-employees of neighbouring developer Infogrames, has been bought by Sega. The Japanese firm's latest acquisition will form part of a new company called Sega Software, supporting both Sega and PC formats.

The 20-strong team, renowned for its 3D design skills on the PC, has undoubtedly been brought on board to develop launch titles for Sega's next console, expected by the end of 1998. Because the machine will apparently incorporate leading-edge PC technology, a firm like Adeline is expected to find the switch to the new format easy. The Lyon-based outfit had once been targeted by Nintendo to develop for the N64 but pulled out of the deal because it did not wish to relinquish its PC expertise.

Adeline's previous output has consisted of PC and PlayStation versions of *Time Commando* and *Little Big Adventure*, published in Europe by EA. Parisian parent company Delphine will retain the Adeline name, its back catalogue and the rights to any extensions of its brands, such as the PlayStation version of *LBA2*.

Sega's move underlines its determination to ensure that it has the right kind of quality software in place by the time its new console is launched in 1998.



French developer Adeline, headed up by Frédéric Raynal (far right), is bringing its considerable expertise to the Sega fold. The new team, called Sega Software, is expected to focus on work for Sega's upcoming Saturn 2 unit

Sega's Chinese whispers
Sega is planning to release the Saturn in China in an attempt to kill off the continent's huge hardware and software piracy market. It is the first time a major manufacturer has attempted such a move.

64DD development shifts into top gear
In an interview with a Japanese videogame magazine, Nintendo's Shigeru Miyamoto has revealed that 20 games are currently being developed for the N64's 64DD device. Among them are two *Mario* titles: *Super Mario RPG 2*, which is being developed solely by an inhouse Nintendo team (rather than in conjunction with Square, which was the case with the original), and *Mario Paint 64*, which will apparently be compatible with a secret new input device. Nintendo still hasn't decided which of these will be shown at Shoshinkai this Autumn, however.

The Mac is back
Mac aficionados are currently declaring the system's rebirth as a game machine. *Duke Nukem 3D* has sold immensely well since its released in July, and several new PC conversions are on the way including *Quake*, *Unreal* and *Mech Warrior 2*. The renaissance is perhaps mostly down the use of Power3D, a Macintosh graphics accelerator from Techworks and 3Dfx, based on the latter company's Voodoo technology which has already famously stormed the PC game-technology market.

PHILIPS TAKES THE HMD PLUNGE

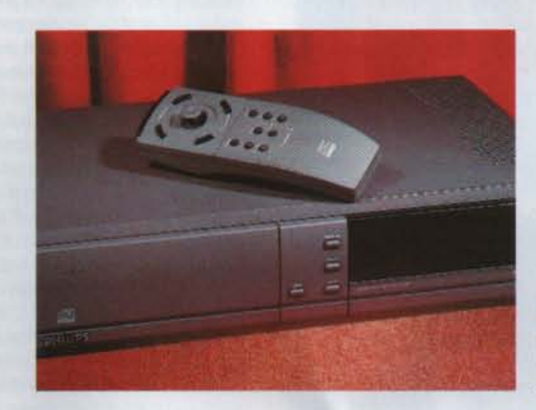
Electronics manufacturer Philips has re-entered the world of videogame technology with a new head-mounted display unit called Scuba.

The company abandoned production of its ill-fated CDi console two years ago and announced earlier this year that it was moving out of the leisure software market, selling its assets to Infogrames (see **E**43). The arrival of the new technology heralds a new lease of life for the Dutch company.

The unit's potential for success is unclear, however. In order to keep the Scuba's retail price down, Philips has decided against including head-tracking capabilities or 3D stereo graphics – both of which have been employed in previous headsets to accentuate the immersive nature of the experience. What the device actually does is completely cover the gamer's eyes, shutting out all extraneous light – rather like a scuba mask, hence the name.

In terms of audio/visual performance, Scuba acts rather like Virtual IO's headset, with two LCD screens which fill the player's field of vision, and a stereo speaker beside each ear. It is worth noting that Virtual IO itself had little success with this formula, though, and has recently filed for bankruptcy.

Even without hi-end capabilities such as head tracking, the device is due to retail at around $300 in the States – twice the price of all leading consoles. It's debatable whether gamers are likely to abandon their TVs in order to use a device which offers no huge improvements over previous models of its ilk. No word has yet been given on a UK release.





Philips will no doubt be hoping Scuba (above), will prove more successful than its last ambitious hardware venture, the CDi (left)

PLAYSTATION ANALOGUE JOYPAD SNEAKS INTO UK

Sony's PlayStation analogue pad has sidled onto UK shelves three months earlier than expected. The device was due for official release in October – one month after its US debut – but can now be bought for around £25 in most computer retail outlets.

The reasons for its hushed arrival are not clear, but it could be the peripheral's lack of software support which currently stands at just one PAL title, Sony's own *Porsche Challenge*.

Also disappointing is the fact that the US and UK pads do not feature the vibrating feature of the Japanese model. Sony has claimed it was dropped after market research revealed that gamers found the analogue feature to be most important. However, one developer told **Edge** that 'repeated use of the force feedback breaks the controller's inner components.' Another claimed that Sony is concerned that Nintendo will sue over the product's similarity to its own Jolting Pack (although the chances of this happening are ridiculously slim).

It is more realistic to suppose that Sony has removed the feature due to concerns over price. The company is desperate to get developer support for the peripheral, perhaps because of the huge critical acclaim and financial success of *Super Mario 64*, which so successfully showcased the potential for analogue control in a 3D environment. Sony is obviously aware that developer support for its own analogue hardware will not be forthcoming if the inclusion of force-feedback makes the product too pricey for the consumer.

There is a significant amount of compatible software in the pipeline, though, with *Crash Bandicoot 2*, *Croc*, *Gex: Enter the Gecko*, *ReBoot* and *Pac Man: Ghost Zone* all due to support the PlayStation analogue pad, and more titles on the way. It seems, though, that US and UK gamers are simply going to have to look elsewhere for their shakes.



***Porsche Challenge* (main) and *Tobal 2* are among the titles which support the joypad**



Sony's PlayStation analogue pad has received an early UK release, but without the inclusion of force-feedback technology evident in Japan

GAME.COM HITS UK MARKET

Following the recent launch in the States, Tiger Electronics is about to release the Game.Com handheld games console in the UK, where it believes the machine will provide the first real challenge to the dominance of Nintendo's ageing Game Boy.

The system, which, as standard, combines calculator, address book and calender functions with an 8bit games console facility, hopes to win over Game Boy fans and new adopters alike with a selection of big-name titles to follow the launch.

As well as Tiger's own popular *Lights Out* game (which takes advantage of the unit's stylus-controlled touch-sensitive screen), owners can expect versions of *Duke Nukem 3D*, *Sonic Jam*, *Batman and Robin*, *Fighter's Megamix* and *Jurassic Park 2* to appear on the diminutive carts in the coming months.

Edge has tested the Game.Com unit following a visit by Tiger's UK representatives, and can report that although innovative in some areas, the unit is unlikely, at this stage, to give Nintendo many sleepless nights.

Pack-in title *Lights Out* is an addictive little game, but falls short of the killer-app status of *Tetris*, a title which virtually singlehandedly made the Game Boy such a must-have item. And, although the Game.Com can access the Internet via an add-on cart, owners will still need their own modem and service provider to take advantage of the feature.

As far as further games are concerned, platform game *Batman and Robin* and firstperson shooter *Duke Nukem 3D* are both worthy attempts to provide some much-needed potential thumb action, but are hampered by a slow screen update, which blurs moving sprites. The versions tested by **Edge** were both in early stages of development, however, and may yet be improved.

Where Tiger's box of tricks may find success is in the playground, where children could easily take to its address book and high-score-table functions. In the home, meanwhile, the unit's Internet access may even catch on, despite its limitations.

Outside of Game Boy territory, though, the handheld market has never been a surefire success, as both Sega's Game Gear and Atari's Lynx have proved.

With Nintendo keeping such a tight grip of the diminishing handheld market, Tiger may find the going difficult for its admittedly ambitious project. E



Tiger's inspired licensing department has brought in big-name titles such as *Sonic Jam*. Whether this, and others such as *Duke Nukem*, will be enough to make the Game.Com a success remains to be seen

(out there)

REPORTAGE FROM THE PERIPHERY OF THE VIDEOGAMES INDUSTRY

Trance would be a fine thing

It seems that club culture is no longer the preserve of Sony and its supremely 'up for it' London marketing team. Sega of America has now commissioned two 'top underground' DJs – Commander Tom and DJ MARS – to create a club track around the music to *Fighters Megamix* (right). The resulting slice of trance, which was previewed on US radio station KLYY FM's 'Liphted' show recently, will be released as a single entitled 'Fighters: The Sega Project' in September and will also feature on Commander Tom's forthcoming album. Now only Nintendo is left to jump on the console/dance music bandwagon, although **Edge** isn't holding its breath for 'Mario in Gabba Land'…



A Luscious virtual actress



Jill Cunniff (left), lead singer with US rock band Luscious Jackson, has signed up to provide the voice of 'virtual actress' Laura Lewis in Kenji Eno's latest interactive movie, *Enemy Zero*. The game features Laura/Cunniff as the sole survivor on a spaceship which has been attacked by a mysterious invisible alien; her mission is to find out what the thing is and destroy it. Laura, who has already appeared in Eno's first game, *D*, and a series of 'what's on' TV shows in Japan (see Big in Japan, **E**47) is the world's first 'digital actress': a virtual woman who Eno plans to place in various games as completely different characters.

Interactive movies are hardly famed for gameplay innovation, but *Enemy Zero* offers at least one interesting facet: its use of audio. Here, dozens of audio effects, as well as the musings of the lead character herself, give clues which lead to progress. As Cunniff herself states, 'This game was designed around the concept that what you hear can be as useful or as frightening as what you see.' Of course, anyone who has ever heard a Luscious Jackson track will be extremely knowledgeable about how frightening sound can be.

Sega goes for Goldie

Despite restrictions enforced by a Stratford-upon-Avon bureaucracy queasy at the prospect of another visit from the Great Unwashed, this year's Phoenix festival offered sun, substance abuse… and Saturn games. Four years ago, the event would have been called the Sega Phoenix festival, with cut-out mythical bird adorning main stage replaced by a finger-wagging hedgehog. Nowadays, at a time of a more mature and comparatively impoverished Sega, the company's sponsorship was inevitably low-key – though not necessarily unsuccessful.

The Sega games tent – situated between the Radio One stage and the inappropriately monickered Think Tent – was surprisingly packed throughout the four-day festival. From 11am to 2am, festival-goers could be found sampling the delights of *Manx TT*, *Worldwide Soccer '97* and *Sega Rally*. Early demos of selected titles from Sega's Christmas line-up were also available, with *Quake*, *Duke Nukem* and *Last Bronx* pleasing the eager crowds.

For those with guest passes and no inclination to mix with mere punters, Saturn units could also be found in the Phoenix VIP enclosure, *WWS'97* proving particularly popular with a constant stream of B-list celebs and executives 'slumming it'.

An **Edge** source claimed that Sega refused to offer bribes in order to get a high-profile team for the traditional Phoenix celebrity five-a-side tournament. Penny pinching or principles? Only Sega knows. Its eventual team, consisting of Goldie (right, below) and members of Metalheadz, received Saturn units and games in return for sporting Sega's custom-designed shirts. *The Guardian* allegedly offered the coveted Groucho Club team (featuring a snarling Keith Allen) a sweetener of hotel bills and bar tabs settled during the festival's duration. C'est la vie, Sega.

While hardly the type of marketing capable of shifting a significant number of Saturns, Sega's presence at Phoenix offered a welcome diversion for thousands too broke or bored for the usual dance/drink/whatever activities. And, of course, the six or seven Saturn owners in attendance…





EDGE SINGLES OUT THE WINNERS AND LOSERS IN THE INTERMINABLE BATTLE FOR VIDEOGAME CRED

(game on)

The **secret new technology** Jeff Minter is working with, which, if his word is bond – and not spliffspeak – could revolutionise videogaming.

Nintendo's revelation that ***F-Zero 64*** will include a simultaneous fourplayer option. **Edge** eagerly awaits the future of racing games…

The decision by SegaSoft's online gaming network to send a demo disk of **Heat**, along with hats and T-shirts, to Saddam Hussain in Iraq.

SoftImage/Psygnosis's **Psybadek party**, the best bash of '97 to date.

The **dance interpretation** of *Tekken 2*, as seen on a segment of 'Cool Britannia', Channel 4's one-night run supposedly focusing on hip Brits.

The decision to not release the Saturn version of **Fighting Force** in Europe. Japan's gain looks like being the UK's loss.

Mortal Kombat 4. An all-new polygon engine? More blood? More gore? New fatalities? Who actually gives a toss?

3DO's **IMSA Racing**, the much-hyped 'M2' racer. Oh dear.

(game over)

Production editor wanted



Due to internal restructuring, **Edge** needs a talented and experienced production editor to be based at its office in Bath. To be considered for the position, applicants will need the following:

- An excellent grasp of the English language
- Strong subbing and writing skills
- The ability to enforce rigid deadlines
- A keen interest in interactive entertainment

Applications should be made in writing to: The editor, **Edge** magazine, 30 Monmouth St, Bath BA1 2BW. Please include a CV and a 500-word critique of **Edge** magazine.

Where are they now?

NAME: **SIR CLIVE SINCLAIR**
FAMOUS PRODUCTS: **ZX80/81, ZX SPECTRUM, QL**



Incredibly, Sir Clive Sinclair had already been in the science and research business for 20 years before he unveiled the landmark ZX80 home computer in February 1980.

But it was this product, followed a year later by the ZX81, that really put Sinclair on the home-technology map. Through this now laughably limited piece of equipment, many of today's finest game designers had their first experience of programming, and it was via a later successor, the legendary ZX Spectrum, that the videogame industry first flourished. This machine remained a market leader for many years, playing host to thousands of games as well as a significant amount of the industry's finest moments.

By 1986, however, the games industry was changing. The rise of home consoles from Japan such as Nintendo's NES and Sega's Master System were beginning to take a bite out of the gaming scene, while the Amiga and PC were becoming the only choice for serious home computing. As a result, Sinclair moved out of the market, selling the brand name 'Sinclair' to Amstrad, and ending an era for both himself and the computer industry as a whole.

Since then, Sinclair's career has been varied, to say the least. After 1985's much-derided and commercially disastrous C5 electric car came the Z88 portable computer, produced under the aegis of a new company, Cambridge Computer Ltd. The firm went on to design a satellite dish before it was sold to SCI in 1991. After this came 1992's electric bicycle, Zike, and a detachable electric motor for cycles, named Zeta, which has so far sold 15,000 units. Zeta mark II was released early this year.

However, Sinclair has now gone back to his original speciality – taking well-known technology and miniaturising it (he invented the first true pocket calculator back in 1972). The Sinclair Z1, launched in June, is a tiny VHF radio that fits in the ear and includes an auto-scan function. It has so far sold over 10,000 units. Sadly, Sinclair is unlikely to return to the home-computer market, so it looks like a 64bit ZX Spectrum is not on the cards.

VIDEOGAMES ON THE EDGE

The games – old, new, whatever – that have brought work to a standstill in the Edge office this month

Street Fighter EX Plus Alpha (PlayStation NTSC import)
Capcom may have obliged PlayStation 3D fans with the introduction of a shedload of polygons, but it has retained the series' tried-and-tested gameplay mechanics. A fine slice of 32bit beat 'em uppery.

Last Bronx (Saturn)
Sega proves that its development teams have not lost their edge when it comes to bringing the coin-op experience to the home. An over-the-top fighting game that all Saturn owners should consider buying.

Atomic Bomberman (PC)
So it may not have the charm of the numerous console versions, with unnecessary speech additions and suchlike, but with **Edge**'s consoles having been 'borrowed', this is the next best thing, no question.

Yie Ar Kung Fu (MAME emulation)
Konami's beat 'em up is an intriguing title, proving that the Japanese codeshop was as innovative in the early '80s as it proves to be today. One of the most influential fighting games ever created.

The Lost World: Jurassic Park (coin-op)
Surely the last word in lightgun shoot 'em ups… at least until Sega's next Model 3-based extravaganza.

nuMedia

A meeting point for media capitalising on the digital entertainment revolution

in association with



No 17



Apple Newton MessagePad 2000

Following the success of the Filofax in the '80s, its gradual move from status symbol to practical everyman object, it was perhaps inevitable that the electronic versions would follow. Thanks largely to Psion, the PDA has recently made the same move and is now as ubiquitous as the mobile phone. Anyone who's ever tried to use one to type anything bigger than a memo, however, will know why 6lb notebook computers from the likes of Compaq are still selling, however. Unless the user happens to have fingers that taper at the end, the tiny keyboards that accompany these electronic organisers are all but useless.

That's where the MessagePad 2000 comes in. Admittedly, it's too big to fit in a jacket pocket, being roughly the same size as a paperback book, and it is heavier than the latest Psion, but it does use a proper keyboard (which costs another £80) which plugs neatly into the side. This transforms what many would regard as a novelty item into a powerful word-processing tool. Eliminating the need for tapered fingers is its most practical feature, but it's by no means the most impressive. Unlike the previous 120 and 130 models, the MessagePad 2000 is capable (with add-on card) of a live text-only Internet link, fax and email facilities on top of the word-processing, notes and contact-manager programs that come as standard, as well as a docking program that allows the Newton to talk to both PCs and Macs to transfer data. There's even an facility for infrared transfer between Newtons, in the unlikely event that the user meets up with other like-minded Newton convert.

The feature that most people associate with MessagePads, however, is handwriting recognition. After a couple of false starts (with the 120 and 130 models), Apple has finally got it right: errors are rare, and easily correctable, and the Pad's drawing facility is excellent. Powered by four AA batteries, the unit offers six hours of use with the screen in backlit mode, or 24 without the light.

Ultimatly, **Edge** can't help feeling that Apple has once again set a standard that will be largely ignored by the masses. Like its big brother, the Power Mac, the Newton is easier to use, looks better and is more practical than its competition. It would simply be too much to hope for to find this great little device on the shelves of every Dixons in the land, and judging by the stock shortages and general lack of aggressive marketing that plagued the Power Mac's launch, simply getting hold of one is likely to be a task in itself. In any event, the MessagePad 2000 is probably far too useful and innovative ever to catch on. Cynical, yes, but probably true.







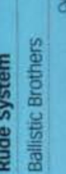
MessagePad 200, Apple Newton, Tel: 0800 127753

Music

Let Us Play
Coldcut
Ninja Tune



Since their early chart action with Yazz and Lisa Stansfield, Matt Black and Jonathan More have veered wildly between almost every musical genre imaginable. 'Let Us Play' is a showcase for that eclecticism, and so is equally capable of inducing awe as it is of committing aural violence. Hence 'Return to the Margin' transports hip hop into cool dub, 'More Beats & Pieces' reinvents the Coldcut of yesteryear, and 'I'm Wild About That Thing' takes their cut-and-paste style into funky phone-sex territory. An album of multiple personalities, many of them bordering on genius.





The Ballistic Brothers (DJs Ashley Beedle, Rocky, Diesel and Dave Hill) have returned, with a slab of tunes that provide the perfect late summer soundtrack. With influences spanning the globe, 'Rude System' certainly caters for the most discerning of music lovers, mixing breakbeat, funk and fine groove and adding a sprinkling of ambience for good measure. 'The Conversation' and 'Rule of the Bone' are particularly fine tracks as are reworked classics 'Blacker' and 'Love Supreme' (parts 1 & 2). This album takes the listener on a chilled, refreshing journey and to ignore it would be, well, rude.

Gadgets



Sharp XV-C1E projector



● XV-C1E ● £1,000
● Sharp Electronics ● Available now

Until recently, owning a quality projector in order to complement a Pro-Logic surround-sound setup was only an option for lottery winners or members of the aristocracy. However, Sharp has just introduced its latest LCD-based machine at the very reasonable £1,000 mark. Other machines in this price range have existed before, but none offered the kind of quality nor range of features found on this model. Indeed, many of its functions, such as on-screen menus and keystone adjustment to compensate for picture distortion caused by the projector's upward angle, are usually only found on far more expensive projectors.

The XV-C1E will project pictures up to 150 inches (diagonal) in size, and the quality is particularly impressive for a machine of such relatively low cost. Multi-standard compatibility, composite and S-VHS inputs should keep import-laserdisc owners happy, and of course there's nothing to stop console users from plugging in their machines for a real, full-on gaming experience.

The low price tag does of course force certain cuts to be made ,and these are reflected in the fact that the slimline, 3.5kg unit does not have remote-control capability, offering instead a simple-to-use backlit button menu on the projector's top panel. Furthermore, there's no zoom function (meaning the projector has to be physically moved in order to alter the image size), while the luminescence and resolution values are also lower than models further up the range.

Nevertheless, the XV-C1E still represents excellent value for money and brings the real home cinema experience one step closer to the mass market.

XV-C1E, Sharp Electronics. Tel: 0161 2042505

Psion Series 5 palmtop

Psion has a battle on its hands. Having long reigned supreme in the land of palmtop computers, now, with the launch of numerous *Windows CE* devices, the company is attempting to find new ways of making its proprietary interface and operating system the favourable option.

Enter, then, the Psion Series 5, a new device which can boast 8Mb of RAM (the low-end version weighs in with 4Mb), a VGA-resolution screen and, for the first time, a touch-sensitive display. Although the core software hasn't changed from the previous and popular 3c series, the means of controlling the device with a simple pointer makes the device a lot easier to use. As does the excellent new laptop-style keyboard.

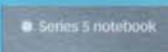
The software which comes as standard includes a fully functional word processor, a fairly simple spreadsheet, a diary-cum-organiser, a sketch program which is ideal for adding signatures to files, and a host of communications programs which enable users to send and receive faxes, handle email, and (with a plug-in planned for later in the year) even browse the World Wide Web.

Like the 3c before it, the 5 Series features an infrared communications port, allowing files to be sent between to other Psions or even an infrared-equipped printer without the need for leads. For PC connectivity, the palmtop comes with a PC serial lead and the *PsiWin* software package as standard. When plugged into a Windows 95-enabled PC, the Psion simply appears as a folder on the desktop, from which files can be easily exchanged.

As an added extra, the Series 5 comes complete with a digital voice recorder which acts as a hi-tech dictaphone. Users simply hit a button on the bottom of the machine and speak into the discreet microphone – the system allowing the recording of several minutes' worth of messages.

This, and the other unique features, make the Psion Series 5 one of the very best palmtop systems currently available.





● Series 5 notebook ● £500
● Psion ● Out now

Series 5, Psion. Tel: 0990 143050

State of the Art
Art of Noise
China records



Art of Noise were certainly one of the most influential and experimental UK groups of the '80s, and their resonance is still felt in today's club scene. For proof, check out this incredible 3CD boxed set which includes ambient, hard house/techno and drum'n'bass reworkings of the groups finest tracks, contributed by the likes of The Prodigy, The Orb, Carl Cox, LFO and PFM. Any Art of Noise fans who can remember 'Opus 4', 'Legs' and 'Eye of a Needle' should invest and experience the '90s versions of these '80s classics. And those who can't should still take the plunge.

Golden Section
System 7
Big Life records



Steve Hillage and Miquette Giraudy are quietly rising through the ranks of the dance scene, shaking off bandwagon-jumping accusations and showing a thirst for melody that's missing from many trance and techno whippersnappers. 'Golden Section' refines the formula, with some addictive trance on 'Rite of Spring' and Talvin Singh-backed ambience on 'Don Corleone'. There's a lack of bite on the drum'n'bass elements, but this is the only weak spot on an album which demonstrates that adventurous samples and digital squalls can go hand in hand with real tunes.

Gadgets


MPEG digital video camera

Many people would probably ask, 'What on earth is the point in such an expensive piece of kit?' Well, if the potential user is into making videos to send off to Jeremy Beadle, then a humble camcorder will suffice. But if that user wants to impress, then this is *the* piece of kit to plump for. Using a 260Mb storage card to hold movies, this MPEG video camera – the first of its kind – takes digital footage, thereby consigning magnetic tape to history. Plus, high-quality video is a doddle to record, thanks to the various image-enhancing devices on board, and the output is perfectly suited to applications like adding video clips to Web pages. It's expensive, yes, but this really is the cutting edge of video recording on the move: being able to encode MPEG video on the fly is impressive by anyone's standards.

MP-EG1A Digital Video Camera, Hitachi, Tel: 0181 849 2000



- MP-EG1A
- Hitachi
- £1,500
- Available now

Books

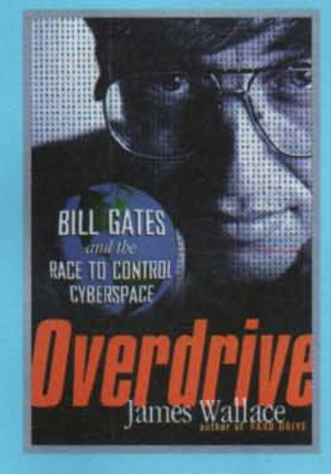

Overdrive

- James Wallace
- John Wiley and Sons
- £17
- ISBN 0-471-18041-6

In 1993 Bill Gates stated: 'At Microsoft, we have hundreds of people whose job it is to create the software that will make the Information Superhighway an idea worth having'. It is amazing, therefore, that Gates took so long to commit to an Internet strategy. 'Overdrive' asks why.

The main conclusion drawn here is interesting. Wallace argues that the antitrust lawsuits being filed against Gates when the Internet was creeping into mass awareness totally distracted him. Laughably, it took a posting on the Internet claiming Microsoft had bought the Catholic Church to finally get his attention. This hoax generated such a huge amount of publicity that Gates glimpsed the power of the Net at last and wrote his monumental memo 'The Internet Tidal Wave'. This sent his company into a Net frenzy and the rest is, of course, history. Or in this case, *Microsoft Internet Explorer*.

Wallace was offered no assistance with this book – mainly because 'Hard Drive', his first work, was used as evidence against Microsoft in Gates' antitrust case. He has, however, done a great job chronicling Microsoft's part in the incredible rise of the Internet.



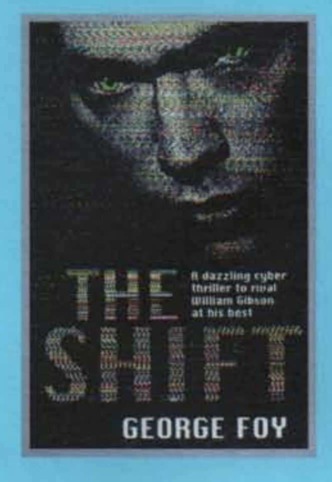
The Shift

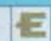
- George Foy
- Bantam Books
- £6
- ISBN 0-553-50611-0

The premise of this cyber-by-numbers novel is instantly recognisable. A new media format called Virtix has emerged; a broadcast VR system which is about to be premiered with tacky soap opera, 'Real Life'. Alex Munn is a schlock writer at the TV studio responsible and to relieve his lack of creative fulfilment, he designs his own private VR world based on New York in the 1850s, complete with the 'Fishman', a homicidal maniac. As time passes, Munn begins to blur the boundary between real life and the virtual environment he has created.

Beginning promisingly with Foy clicking into a pseudo-Chandler style, the book follows amnesia-struck Alex as he tries to discover whether he murdered his wife or was framed. However, although the picture painted of New York and its resident media is impressive, Foy lacks the technological understanding of authors such as Gibson or Cadigan – a fatal flaw.

He also has a problem with pace. 'The Shift' completely loses its bite after the first few chapters and becomes just another thriller set in the near future. Hardened futurists looking for another fix of cyber fiction will be disappointed.



Music


Joint Ventures
Various
Ninebar records



Joint Ventures is an eclectic fusion of freestyle sounds ranging from jazz to jungle to drum'n'bass. As the title suggests, all the artists featured here are paired up (Cujo/Funki Porcini, Furra/Zero) leading inevitably to a fresh synthesis of grooves and beats. The jungle mixes 'Predatary' (Sureshot featuring George) and 'Eclipse' (Noise/Paradox) are standout tracks, as are the laidback grooves of 'Childhood' (Flavornauts/Ian Simmonds) and 'Scram' (Cujo/Curtis). In fact, each tune offloads its own flavour and style to the give the album a totally refreshing experimental edge.

Hip Hop Don't Stop 2
Various Artists
Cypher



The influence of old-skool hip hop and electro on current DJs and dance acts cannot be overstated. Tracks like 'Hip Hop Be Bop' by Man Parrish and Mantronix's 'King of the Beat' virtually created sample-led club music, while Schoolly D and Eric B were spitting out rhymes while Snoop Doggy Dogg was still a puppy. Other early delights to relish on this essential selection come from Public Enemy, the first true crossover rap outfit that refused to compromise, and Run DMC, before they started to churn out chart hits. Ultimately, this is just as vital as 'Hip Hop Don't Stop 1'.

Netscape: Welcome to Netscape

netview

EDGE'S EXAMINATION OF THE INTERNET AND ONLINE GAMING SCENE

A **byte** of the **Apple**

As soon as the Internet began to trickle into homes and offices throughout the world, companies of all descriptions sniffed out a major advertising opportunity and rushed to get a presence on the WWW.

Now, however, the virtual high street is getting crowded, and those companies are finding that simply knocking up a page in two days and slapping on the Net is not enough. Pages must now be stylish and innovative to get noticed in the crowd.

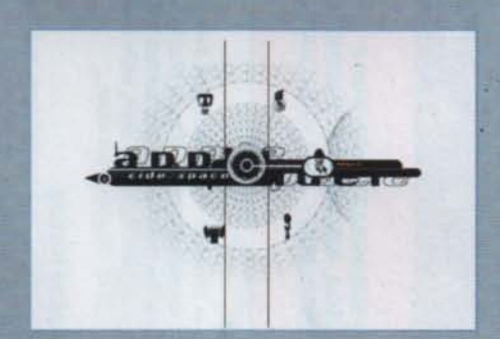
Hence Apple's sponsorship this year of the Design and Art Direction student awards' Interactive Media category – a competition for professional and potential multimedia designers looking to show off their talent to the industry.

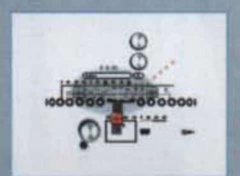
The computer company's challenge was to design a new Apple web page which used a selection of the latest Net technologies and which communicated specifically to students why they should buy a Macintosh system.

The winning entry, which took three months to complete, came from Lars Eberle, Ines Pach and Vassilios Alexiou. All three are students on Middlesex University's obviously excellent MA in Design for Interactive Media, based at its Centre for Electronic Arts. Their site, compiled using *Shockwave*, *Java Script* and *StrataStudio*, has an understated aesthetic cool and, according to the judges, addressed 'the relevant issues about Apple and technology in amusing ways.' In fact, the site was so highly regarded it was felt to be better than many professional entries to the D&AD competition.

Ultimately, although the judges went on to point toward the team's animation and conceptual skills as major factors in their success, **Edge** can't help but think it was the site's title – Cyderspace – that clinched it. What better to catch a student's attention than to name the page after a form of alcohol that gets you hammered quickly on a tight budget?

To find out more about the MA in Design for Interactive Media at Middlesex university, call 0181 362 5000, or visit **http://www.cea.mdx.ac.uk/** To view the site, check out: **www.cea.mdx.ac.uk/DandAD** or: **www.ines.com/apple**







Cyderspace has a clean, uncluttered look which impressed the Design and Art Direction judges. It was designed primarily to appeal to students

Rule **Britannia**









***Ultima Online* presents a huge and immensely pretty version of Brittania. The landscape is packed with various monsters, towns and topographic features**

Origin's *Ultima Online* – the multiplayer version of its hugely successful swords 'n' sorcery videogame series – has at last gone into public beta testing in the US. This incomplete version has already attracted 50,000 potential testers, and many have had to be turned away. The game had been undergoing a limited trial for a couple of months before the public test was announced, and already players have begun to form guilds and dedicated websites – as has occurred with 3DO's equivalent, *Meridian 59*.

Visually, *Ultima Online* is very impressive, boasting a highly detailed isometric landscape which puts most multiplayer Net games to shame. The gameplay too is impressive, taking place in a massive online version of Britannia (the realm where all *Ultimas* have been set) which includes an explicitly realistic eco system. Non-player characters have their own living and feeding patterns and every action a player makes can have serious consequences for the rest of the world. Slaying all the sheep grazing near a dragon's lair, for example, will force the creature to invade local towns for food. This is perhaps the closest Net gaming has come to simulating real-world physics-style considerations.

Although the full game is set for US release in September, no European date has yet been given. However, gamers on this side of the Atlantic who are unable to wait will be able to play the game by getting hold of an imported CD-ROM – the only problem being that all technical support will be based in the States. Eager UK RPG fans should perhaps start saving up for those long distance phone calls now...

To find out more about *Ultima Online* visit **http://www.ultimaonline.com**, which features a world history of Brittania as well as a list of its indigenous wildlife, spells and weapons

BIG IN JAPAN

- THIS MONTH...
- OTAKU EVENT
- VF3TB QUASHED
- SEGA GOES ONLINE

EDGE REPORTS FROM JAPAN'S PREMIER FAN-CENTRIC EVENT, WHICH SAW INNUMERABLE INDIVIDUALS CAPTURED ON CAMERA BY MEMBERS OF THE THE JAPANESE PRESS. SEGA, MEANWHILE, SHOWED OFF AN UPDATE OF *VIRTUA FIGHTER 3* – UNFORTUNATELY, TO A LESS-THAN-RAPTUROUS AUDIENCE

JAFCON one

Although events like the Tokyo Toy and Tokyo Game Show attract their fair share of obsessive videogame, anime and manga otaku, it is JAFCON (Japanese Fantastic Convention) which brings them all trundling out of the woodwork. This intense one-day event, held every July in Tokyo in a huge exhibition centre built on land reclaimed from the sea, is essentially the eastern equivalent of a sci-fi convention. Thousands of fans turn up to talk about their favourite characters, and thousands of exhibitors turn up to sell them little models and souvenirs of those characters for exorbitant prices. Rest assured, everyone goes home happy.

At this year's JAFCON, though, there was an even more obsessive feel. Here, for example, snuggling between big names like Sega, Bandai and Takara were exhibitors who had made their own models by hand, and produced these as very limited editions. As a result, many otaku queued outside all night, and, as soon as the doors opened, rushed in to buy their cuddly Ranma dolls as quickly as possible. Incredibly, many exhibitors displayed 'sold out' signs after just 30 minutes, spending the rest of the day answering questions posed by masses of adoring fans.

For the big companies attending JAFCON, the event was an opportunity not only to sell their comic/video game-related trinkets but to learn which trends are likely to filter down to the non-otaku masses over the coming months. Bandai, for example, learned the unfortunate lesson that it is no longer flavour of the month – its previously popular Dragon Ball, Power Ranger and Sailor Moon characters were distinctly out of favour, with only a few nostalgic fans exhibiting models.

It was left to Sega to become the toast of the event, exhibiting for the first time and showing a range of *Evangelion*, *Fighting Vipers* and *Sakura* characters as well as the odd *Sonic* figurine. It was this videogame-related paraphernalia that flourished at the show, mostly at the expense of exhibitors showing off regular scale models inspired by anime and manga themes. To add insult to injury, the only Bandai products which matched Sega's for popularity were its Gundam models – and this is mostly because the characters have appeared in several recent Saturn games.

As usual at these events there was a large 'Cosplay' element, with many otaku showing up dressed as their favourite characters. For some reason, these highly elaborate home-made costumes attracted the ravenous attentions of press photographers, who spent up to ten minutes snapping away at the most well-dressed punters. Interestingly, magazines dedicated to Cosplay are appearing at an alarming rate in Japan, while dedicated parties take place in Tokyo every month. At least 'cossies' are getting out more...

To be this good takes testing

Like most coin-op manufacturers, Sega regularly tests its forthcoming titles at select arcades to gauge player responses.

The most recent example of this took place in the basement of a famous game centre in Tokyo, where temperatures soared to a palm-moistening 34°C as sweaty gamers got their hands on *Virtua Fighter 3 TB* (team battle) and *Splash Wave* – an AM1 waterski game using the popular *Alpine Racer* cabinet.

The former was the key title, allowing players to choose a team of three fighters before going into combat. Plus, although the backgrounds and characters are identical to those in the original game, there are also a few new attacks to give the game some added appeal. Unfortunately, however, a *King of Fighters '97* machine that was placed right next to *VF3 TB* drew considerably more gamers. Back to the drawing board, then, Sega?

It's only Words

Sega does not spend all of its time hanging around in sweaty basements, though. The company has also recently released its first network game for Japanese Saturn modem users: an RPG named *Words* which can support up to 5,000 players at any one time. As with 3DO's *Meridian 59*, players can buy and sell items in the game as well as fight, explore and chat to other players. They can also get married online – which, sadly, may be as close as many gameheads are ever going to get to the real thing...







Sega demonstrated *Splash Wave* (right) and its new version of *Virtua Fighter 3*, subtitled 'TB' (left, above), at a recent demonstration in one of Tokyo's biggest arcades. SNK's *King of Fighters '97* drew a bigger crowd, though

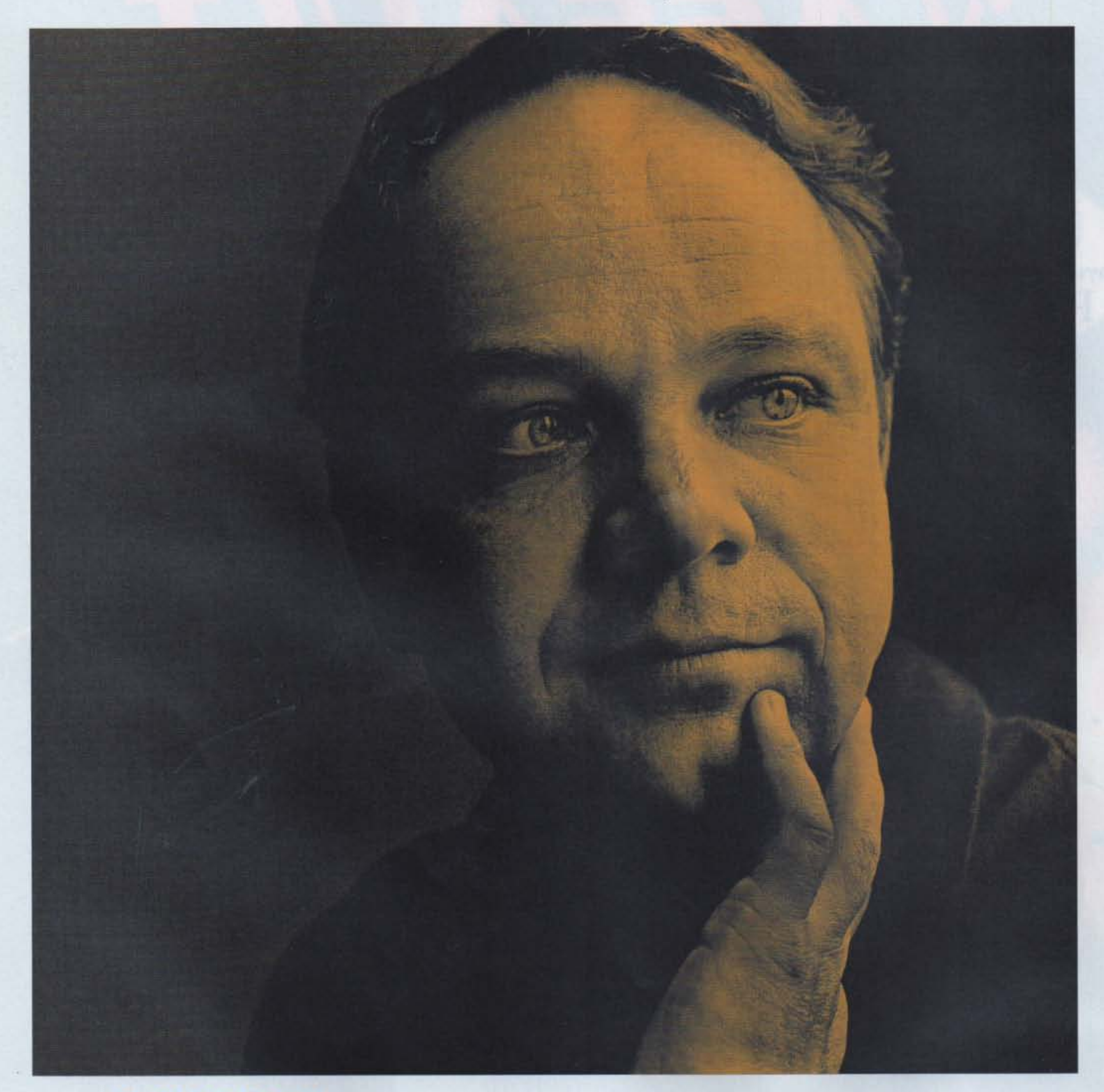








This year's JAFCON attracted more than its fair share of hardcore attendees (above right). The Cosplay fans (right) were perhaps the biggest draw

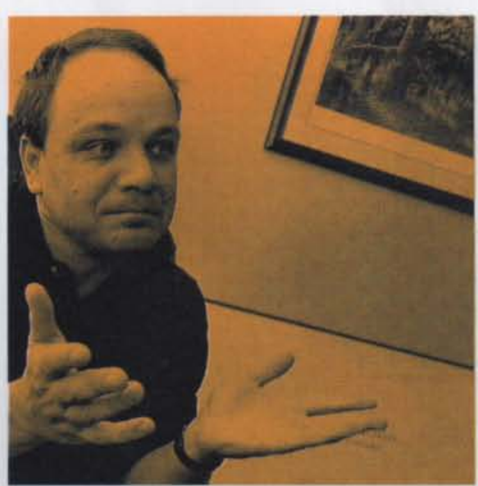


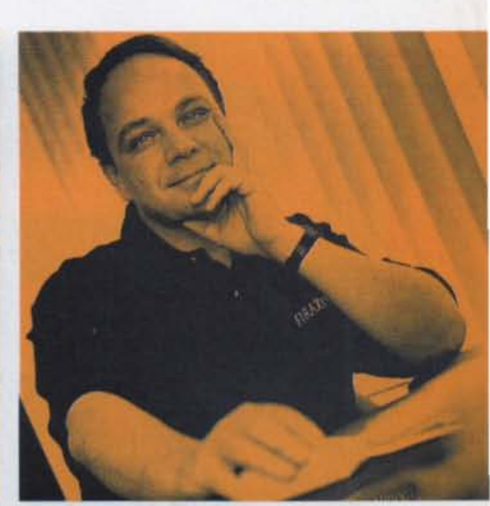
AN AUDIENCE WITH...

sid meier

To a certain type of gamer, Sid Meier – the man who reinvented the 'god game' with legendary PC title *Civilization* – is himself regarded virtually as a god. **Edge** met the man to find out what's next in his grand scheme...







Sid Meier is the game designer's game designer. Although his name may not crop up as often as, say, Peter Molyneux, John Romero or Richard Garriott, Meier is arguably the most respected PC game creator in the world (he's also famous for having founded MicroProse with 'Wild' Bill Stealey to settle a bet in the early '80s). A champion of gameplay over graphics, Meier created titles such as *Civilization*, *Colonization* and *Railroad Tycoon* which spawned a whole new genre and paved the way for the likes of *Command & Conquer* and *WarCraft*.

Meier is now also leading a new trend – that of separating the process of game design from the business pressures software publishing (see The Great Escape, **E**48). His new company, Firaxis, with no marketing team, has two new games scheduled for release 'when they're ready'. **Edge** caught up with him at Firaxis's headquarters just north of Baltimore to talk game design, gameplay versus graphics, and how to attract 50-year-old women...

Edge: What are your plans for your new company, Firaxis?

Sid Meier: Firaxis was formed about a year ago. The idea behind the company was to pull together a fairly small but experienced and, hopefully, talented, design group to focus on PC games. We're all from the entertainment business and up until now we've all worked in large companies. But the plan here is to simply concentrate on design, programming and the creative process, and not worry about marketing and sales – these aren't our speciality and they tend to, um, confuse things sometimes.

Edge: Presumably, the fact that you won't have any business people sticking their noses into your games, asking you to rush the game out or add extra stuff, gives you greater creative control, but surely it also means that you don't have the same access to market research? So how do you decide what sort of games to create?

SM: Well, there's some good news and some bad news there. [Laughs.] When you're working in a large company, a lot of times what the marketing folks will ask you to make is last year's top-seller, but just a little better. Or last year's game with 3D instead of 2D, or 4D instead of 3D. Sometimes that input is helpful, but it often tends to make you worry right at the beginning about trying to please somebody else, whereas we're trying to find a topic that we ourselves get excited about and find a game idea that we would like to play. This way we'll make it a personal game as opposed to pleasing the marketing people or the focus groups. We know that people who like the games we like will enjoy the game we've produced, and this has to be better than producing a game that we don't care for too much but have been told that some theoretical person might like. Of course, there's always the chance that we're really weird and that no one else is going to like the games that we like, but we're willing to take that chance.

Edge: How many games is Firaxis developing right now?

SM: We're working on two games that are both designer-based. I'm the lead designer and programmer on one, and Brian Reynolds, who was the programmer and designer for *Civilization 2*, *Colonization* and a couple of other strong titles, is leading the other project.

Edge: And what kinds of games are they?

SM: We use the phrase 'innovative continuity' to describe our products. In other words, if you're familiar with the games that Brian and I have created in the past, then you won't be shocked by the games that come out of Firaxis. But having said that, we've never done the same product twice, so these games will be new and innovative, just not shockingly so.

Edge: Will they be out by the end of 1997?

SM: Maybe yes, maybe no. But we're happy with how they're coming along and feel we're making progress.

Edge: And presumably you won't rush them out the door to make any deadlines?

SM: [Laughs.] No, that's another reason why we've distanced ourselves from marketing and sales. We've found that a lot of products have really suffered from having been rushed out in time to make a deadline or in a specific quarter. We're not interested in doing that.

Edge: Aside from cosmetics, how do you think games have become more sophisticated over the last five years?

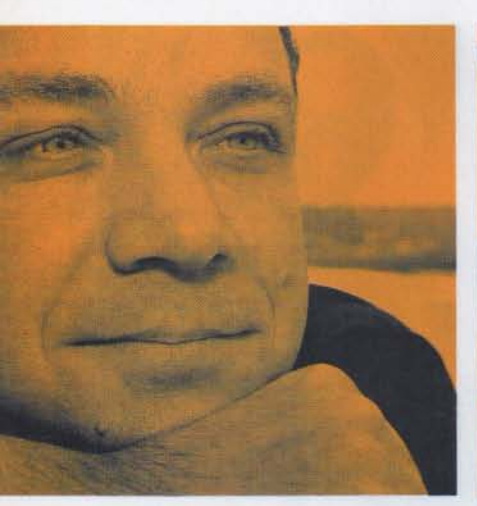
SM: There have been a couple of distractions, but gaming has mainly continued as it always has done. Every now and again, a person or group comes up with a really neat idea, believes in it, and works on it out in the dark. It appears in the marketplace and then everyone says, 'Oh yes! That's what we wanted all along!' *Doom* was one example, and there are a couple of other games that have established a whole new genre. I think *Civilization* was maybe that type of game. Before it came along, I remember talking to someone who said that 'strategy' games were a dirty word! You didn't want your game to be a strategy game because people would think it was this terrible, boring game with this crude map and some big blocky things that moved around, and that you'd need a PhD to play it. That was five years ago. But then a game comes along, *Civilization*, that is fun to play, and all of a sudden you have a whole new genre. Usually, these big new genres don't require any new technology or some super high-speed processor; it's just that someone came up with an idea of a game that they wanted to play.

Edge: So you're saying that the best games are the ones that designers make for themselves?

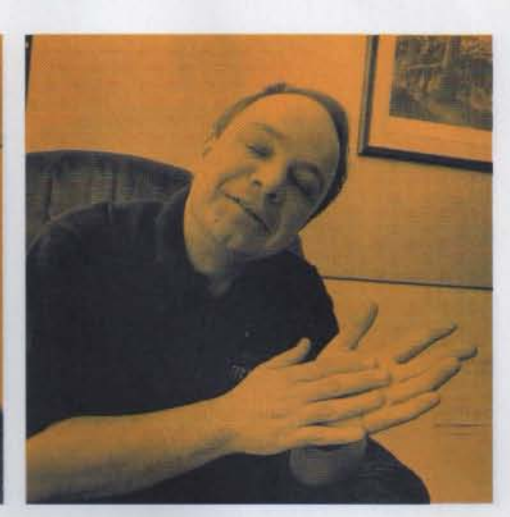
SM: This is the way it's always been in the games industry, and it's been even more true over the last five years. Five years ago people were talking about the new Hollywood and how CD-ROMs were going to turn movies into games and games into movies, and how we were going to need massive teams of artists and cinematographers to create videogames – and none of this has actually happened. This whole notion of games being dragged around by the technology hasn't happened. Through it all, games are still being led by game ideas, designers and players. There's always been the tendency to think that technology drives change in the game industry, but I don't think that this has ever been true. We did fun games with EGA graphics and 640K of memory in the early PC days. Every year it's virtual-reality glasses, CD-ROM, 3D accelerator cards, or some other new technology that people think is going to take us to the next level, but ultimately it's always game design that helps us evolve.

Edge: So do you think that the industry has finally learned that production values don't necessarily matter, and that it's gameplay that counts? Do you think that, for the time being at least, the dream of the big-budget 'interactive movie' is over?

SM: People don't buy games based on development budgets. They buy games based on how much fun they are to play. So now game companies realise that they ▶







can spend either $5 million, $1 million or even just $500,000 making a game, and looking at the sales figures over the last few years, they've got to realise that there's no direct correlation between how much a game costs to make and how well it sells. Of course, there are some titles such as *Myst* and the *Wing Commander* series that cost a lot of money and returned a lot of money, but there are many more examples of games that didn't come close to recouping their development budgets. So companies are backing off from this big-budget blockbuster idea.

Edge: So did players reject the 'Siliwood' – Silicon Valley meets Hollywood – notion?

SM: Players didn't want movies. The idea five years ago was that if your game wasn't a movie, it wouldn't compete. It was thought that people would put up with games but really wanted movies. But as it turns out today, people play the games and tolerate the movie parts.

Edge: Would you agree that the game industry's wooing of Hollywood over the last five years is yet more proof that too many game companies value graphics and cosmetics over actual gameplay?

SM: I definitely think that's true. I have to say that I'm a programmer and a designer, not an artist, so I want that to be true! [Laughs.] But yes, the industry definitely spends too much time trying to add video or incredible graphics to its games. Cosmetics aren't bad, but you have to remember that each game can only have a certain amount of resources and energy put into it. If you concentrate too much on the cosmetics, then inevitably there has to be less attention given to other aspects of the game. Certainly, we need graphics, we need a good interface, we need visual clarity for our information to come across, and we need graphics to do this. But when a designer is asked how his game is really going to make a difference, I hope he has an answer that talks about gameplay, fun, and creativity – as opposed to an answer that simply focuses on how good it looks or how fast it runs.

Edge: And you think innovative gameplay will always more than compensate for a lack of flashy graphics?

SM: Good games take place in the player's mind, not on the computer screen. We can never put images on a TV or computer screen that are as realistic or as vivid as the images that we can conjure in a player's mind once they start to get drawn into a game. So even simple graphics, when combined with good gameplay, are perfectly good enough. In this way, a programmer or a designer can 'create' better graphics than any artist.

Edge: So, looking at the last five years, would you say that gaming's adoption of CD-ROM is a blessing or a curse?

SM: CD-ROM has been a curse in that it's kinda led people off in strange directions. But it's been a blessing in that it's a very economical distribution medium. Right before CD-ROM, we were getting to the stage where there were 10 or even 12 diskettes in a box and production costs were really going up. CD-ROM lets us include better sounds and soundtracks in our games – an area that had always been weak – and it has even led to a few appropriate uses of video. But it hasn't been revolutionary at all. The people who have tried to deal with it as a revolutionary medium and have got caught up with the whole Hollywood model of things have really made trouble for themselves.

Edge: Right now, one of the biggest debates going on in the game industry is how to make games appeal to a wider proportion of the population – certainly, they're not appealing to too many 50-year-old women. Obviously, it's in everyone's interest to expand the appeal of games beyond young males, but there are opposing views as to the best way of doing this. There are those who believe that today's game styles and themes can resonate with broader audiences but don't currently look good enough to be of interest to adults who are used to watching TV. Others argue that it doesn't matter how realistic games may look because the content of today's games is intrinsically interesting to only a small portion of the population, so we should work towards improving gameplay and content issues instead of merely cosmetics. Which camp do you belong to?

SM: I would definitely be in the latter category. Making our games look 'more like TV' isn't necessarily going to make them more attractive to a 50-year-old woman. Most games are written by males with a certain background and an interest in gaming; the games they produce are going to appeal to other males with similar backgrounds and an interest in gaming. If I were to try to write a game for a 50-year-old woman, I'd immediately find myself in the difficult position of having to rely on marketing research and focus groups and some vague hypothetical construct of what I think this person might want to play to help me along. It wouldn't be a game I'd play, and so I don't think it could be a tremendous success.

Edge: So what's the solution?

SM: It's important to expand the pool of designers to include a broader range of the population if we hope to reach these new groups.

Edge: Can the growing online, multiplayer genre broaden gaming's appeal?

SM: I certainly think that online, networked, multiplayer games will appeal to a wider audience than the sitting-in-your-darkened-room-staring-at-the-screen kind of games. But we still have a long way to go. I think if we were having this interview five years from now, we'd look back and admit that in 1997 we didn't know what these online games were all about. The big change over the next years will be the introduction of new genres dedicated to the online environment.

Edge: So whole new game genres will emerge online?

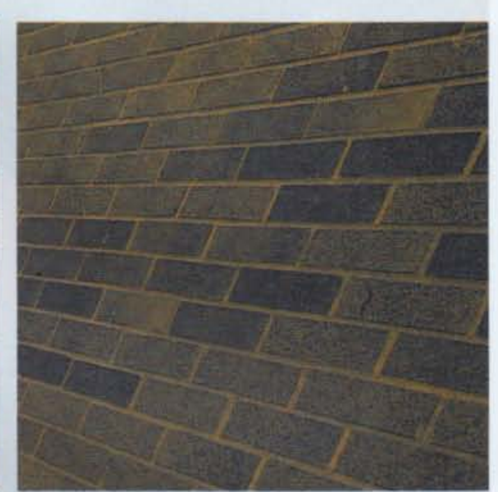
SM: I make the analogy that 15 years ago, when computer games were becoming a reality, the first thing we did was to take existing games – which were predominantly board games and card games, such as Scrabble or Monopoly – and do computer versions of them. And we called these 'computer games'. But since then, we've discovered that there are whole new kinds of games, such as *Civilization* or *Doom*, that work better on a computer and can't be done with any other medium. Right now, the same thing is happening with online – we're taking traditional singleplayer computer games, adding some kind of multiplayer component, putting them up on the networks, and saying, 'This is multiplayer gaming.' But I think a couple of years from now, we'll find that there's a whole different kind of game – and whole different game genres – that work in the online, multiplayer environment.

Edge: Why can online multiplayer games appeal to a wider audience than today's singleplayer games?

SM: If you're looking at a game that has, say, 1,000 players, then obviously not all of those players can be the omnipotent, all-conquering hero in the traditional







computer-game sense. New types of games that require teamwork will emerge online. And right now there are maybe a whole lot of people out there who look at computer games but aren't interested in being the all-conquering, omnipotent hero, yet they might enjoy taking on a different role or being part of a team – with real human interaction. Maybe these people will make up a large proportion of the audience for multiplayer games.

Edge: Some games have already 'broken through' into the mainstream. If you argue that gameplay counts more than graphics, how do you explain the success of such cosmetically rich titles such as *Myst* and *7th Guest*?

SM: I believe that certain games become popular simply by word of mouth – their popularity develops a life of its own. And sure, this is one way to break out into the larger market. But all the people who tried to follow with *Myst* clones found that not only is it very expensive, but that *Myst* was a game that typically you only want to play once – you don't want to play it through twice and you don't want to play another version of it.

Edge: Okay, but has *Myst* been useful in introducing games to people who would otherwise never think to play one?

SM: But these people aren't really gamers. A lot of people see people playing games, want to know why they're playing, want to know why they're having fun, and what's so great about it, and so they try for themselves. And with a game like *Myst* they can understand it, play it, and say, 'Okay, that was fun.' But they're not really game players, and a game like *Myst* isn't going to convince them that playing games is something they want to be doing with their free time.

Edge: Let's talk about the future of games. Most people realise the huge potential of an artistic medium in which the audience can participate. Do you agree that today's games really only scratch the surface of this potential?

SM: Games are going to take over the world, oh yes. It's going to take a while, but there's something inherently more engaging and more entertaining about computer games than there is about any other form of entertainment. It's really the only non-passive form of entertainment, except for sports and certain 'indoor activities' in which people can be entertained and participate at the same time. But yes, we are still at the very earliest stages of what we can do, and we have a long way to go.

Edge: How excited are you about the future of interactive entertainment?

SM: I'm very excited. We could almost get to the point where we could seriously say that we have a medium that's twice as entertaining as TV. If you think about how much people watch TV... People could spend twice as much time playing games as they do watching TV. That's scary!

Edge: Would that make you feel guilty?

SM: [Laughs.] I don't know. I mean I wouldn't feel guilty about stopping people from watching TV, but I think that at some point we have to become responsible. I'm actually kind of concerned about this now with some of the games that are out there. I don't believe in censorship, but I think game designers need to be responsible and think about the effect that they are having on players – especially younger kids. Now it's time for us to think about who we are, what we stand for, and what messages we are giving to our players. Because let's not underestimate our influence – we are really engaging them with our games. Basically, it's just a function of us having been so small for so long. Previously we haven't been called to this responsibility. We've always believed that we've been this small niche and that we're only addressing people who felt the way we do. But as we think about becoming a larger form of entertainment and grabbing larger and larger audiences, we need to think about our responsibilities some more.

Edge: Has this become a concern of yours because suddenly games are reaching more people, or because you feel the content of games is actually getting worse?

SM: I think it's becoming worse. A certain segment of the industry has got itself locked into simply trying to out-gross and out-gore the products that have gone before them. I mean, we've had spines ripped out, how can we top that? The question in a lot of designers' minds seems to be whether or not their game can be more violent, more radical, more outrageous than previous games.

Edge: Isn't this about giving the audience what they want?

SM: Sure, a lot of games are marketed purely on this fact. And hopefully this is a short-lived trend because people will realise that if the focus of the game is just on the blood and the gore then there's probably not much to the actual game. Anyway, I think it's a poor way for a designer to be successful.

Edge: So, given that the games industry seems to be hung up on cosmetics instead of gameplay, despite all of its successes, and remains infatuated with immature subject matter, will the interactive entertainment industry of the 21st Century evolve from the game industry? Or will it be stolen from under our noses?

SM: Right now, we know how to do interactivity. But we could easily drop the ball and let someone else pick it up. The game industry is best positioned to manage the new opportunities because we know that the magic ingredient is interactivity. But we have to concentrate on this. I tell designers, 'Don't try and do better graphics than the movies because you'll lose. What we're good at is interactivity – so make your product win, lose, stand, or fall based on its interactive content.' So I think game designers are in the best position to step in and provide the interactivity for these new forms of entertainment, but I know plenty of other people would like to get involved.

Edge: What advice would you give to new game designers?

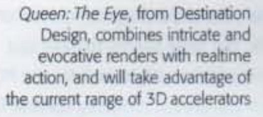
SM: It's strange how we can do very, very difficult things on a computer that don't impress people, and then there are things that are very easy to do on a computer which do impress people. There's not necessarily a correlation between how much work you put into something and how much it impresses people. I was always struck by the old *Space Invaders* coin-op that had those big weird blobs moving across the top of the screen. Today, we could program that in a day, but back then people actually thought that they were really invaders from space and it was very exciting. Then, on the other hand, you could spend six months programming a realistic computer model of a human body and people would look at it, be interested for about three seconds and go, 'Big deal.' So my rule is to think about how much work you have to put into something and how much it will impress not another programmer, but a gamer on the street. They're the ones you really have to impress. **E**

Index

PRESCREEN ALPHAS

It was in October last year that **Edge** first looked at the proposed collaboration between depleted rock band Queen and British softco Destination Design. The game, **Queen: The Eye**, is now on the verge of release. The player takes on the role of Dubroc, a lone hero who has to journey through five worlds in a quest to defeat the 'Eye' of the title – a malignant force striving to strip the universe of creativity. The theme of each world is based on imagery and artwork familiar to fans of the band, and the soundtrack features an hour and a half of Queen's best-known tracks. It would be easy for non-Queen fans to dismiss the game as a cynical marketing ploy, not to mention pretentious twaddle, but they would be missing out on what is likely to be one of the best-looking titles of the year.

Since October, *The Eye* has undergone a substantial graphical revamp which has increased the polygon count on its 30 or so motion-captured characters. The texture detail has also been improved, and the rendered backdrops now look stunning. Whether Destination will be able to successfully marry the twin pressures of paying homage to Queen and presenting ▶



Queen: The Eye, from Destination Design, combines intricate and evocative renders with realtime action, and will take advantage of the current range of 3D accelerators



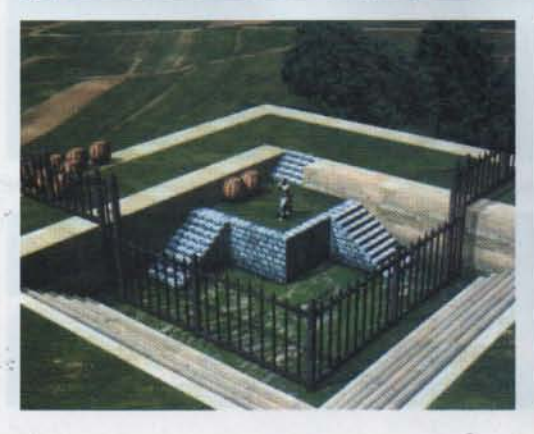








Fortunately, no members of the band appear in the game. The hero, Dubroc, has to battle his way through five worlds and destroy the alien 'Eye' entity







The unpronounceably named *Ehrgeiz* is a new beat 'em up coin-op from Square Soft's Dream Factory (the team behind the *Tobal* series). These are CGI shots; the finished game will use Namco's System 12 board (which powers *Tekken 3*) and debut at the Tokyo Jamma show in September






Sim City 3000 will be released under the joint EA/Maxis label following the recent share swap. These shots (above) are from a very early build

◀ a title that any gamer can appreciate, whether they mourn the loss of Freddie or not, remains to be seen.

Maxis, following its recent share-swap deal with EA, is forging ahead with **Sim City 3000**. The game is likely to be one of the biggest hits of the year, and the company will no doubt be hoping that it becomes the flagship title in the ever-growing range of *Sim* games, most recently realised in the proposed *Streets of Sim City*. The developer's ambitious proposals for the game include the ability to select any citizen and experience life through their eyes, and the true-3D nature of *Sim City 3000* should enable them to get one step closer to that goal. **Edge** will take a closer look at the game next month.

With the Saturn flagging in the marketplace, Sega is turning once again towards the PC for potential profits. The company was at the forefront of the machine's adoption of dedicated 3D cards with its nVidia-compatible *Virtua Fighter Remix*, but that was over two years ago. Since then, the technology has moved on with the advent of 3Dfx and its ilk, but Sega seems to have lost the will to keep up. The forthcoming **Virtua Fighter 2** for the PC will not support D3D cards, which will almost certainly confine it to the mire of sub-30fps beat 'em ups already on the system.





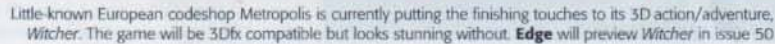
The success or failure of the PC version of Sega's classic coin-op, *Virtua Fighter 2*, will depend largely on whether it can maintain a 60 fps update. Without D3D acceleration, however, that seems unlikely

The latest shots of Imagineer's N64 RPG, *Erutel*, look extremely promising. It may have a hard time rivalling Nintendo's own, eagerly awaited, *Zelda*, however





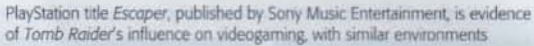



Little-known European codeshop Metropolis is currently putting the finishing touches to its 3D action/adventure, *Witcher*. The game will be 3Dfx compatible but looks stunning without. **Edge** will preview *Witcher* in issue 50

Elite Software is about to leap back into the fray with *Super Touring* for the PC





PlayStation title *Escaper*, published by Sony Music Entertainment, is evidence of *Tomb Raider*'s influence on videogaming, with similar environments





Although similar in concept to *Tomb Raider*, Sony's PlayStation title **Escaper** places more emphasis on action that Core's hit 3D game by giving the player more opportunity to engage in combat. The start of the action depends on which brave adventurer is selected from two available characters – Escaper or Danger. Several camera angles are on offer in order to present the best view of *Escaper*'s smooth animation and 3D environments. There will also be an element of exploration – the characters, which are customisable, will wander through ancient temples searching for relevant objects to use. The game, although classical in style, looks promising.

Tenchu is a new Sony-engineered adventure for the PlayStation that will see players using Ninja techniques in order to eliminate enemies. Some of the fighting sequences are reminiscent of SquareSoft's *Bushido Blade*, and battles can occur anywhere – in basements, immaculately kept gardens, even on rooftops. Completion of the game's eight stages will require a fair amount of stealth, but the player will have the ability to move freely within the 3D environment and to hide in shadows before attacking, as in Konami's forthcoming *Metal Gear Solid*. Judging by the shots **Edge** has seen, the game will feature much Japanese katana sword/body interfacing, resulting in a relatively blood-intensive experience. Hopefully it won't be as woefully short-lived as Square's disappointing beat 'em up.

Sony's **Speed Power Gunbike** is a fast-moving robot beat 'em up with excellent graphics and impressive special effects, continuing Japan's love affair with armoured-suit games. As well as strutting about in their metallic exoskeletons, the ▶



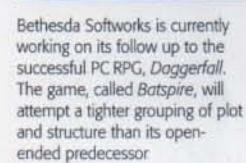


Tenchu is a very traditionally themed Japanese PS game, with gameplay elements similar to those of *Bushido Blade*. The title's adventure leanings will distinguish it greatly, however









Bethesda Softworks is currently working on its follow up to the successful PC RPG, *Daggerfall*. The game, called *Batspire*, will attempt a tighter grouping of plot and structure than its open-ended predecessor

Sega's *All Japan Pro Wrestling* for the Saturn (October) features *VF3* characters





Ragnacoeur looks like being an excellent PlayStation RPG. But will it hit the UK?





◀ game's characters will be able to metamorphose into two other shapes, including a futuristic-looking motorbike which speeds along post-apocalyptic highways. When the finished version hits the streets, players will apparently be able to move freely within the action-packed stages. Expect a range of tie-in toys before too long if this one takes off.

Proving that realtime wargaming is not the sole preserve of the PC, Square is currently working on a true realtime 3D update of its Japanese SNES hit, *Front Mission*. **Front Mission Alternative** will appear on the PlayStation by the end of the summer in Japan, and will travel to these shores sometime in the new year. The game will ditch the machine's conventional controller in favour of the PlayStation mouse, and should prove even more popular than its 16bit ancestor, whose turn-based combat system seemed inaccessible to many gamers, particularly in the west.

Ragnacoeur, an RPG from Sony Music Entertainment, is one of five recently announced titles from the Japanese company. As well as the usual 'quest' mode, the game boasts an innovative feature in the form of MBS, which stands for Memory Card Battle System. After completing the game, the player will be able to save his character onto the PlayStation's memory card and take it round to a friend's house, where they can engage in a special 'battle' mode. It's not yet known whether the game will be released in the UK. **E**









Speed Power Gunbike, from Sony Music Entertainment, combines the twin otaku obsessions of robot and driving games by offering robots which are transformed into motorbikes at the flick of a switch. It's certainly different…

Front Mission Alternative, from Square, is a realtime 3D strategy game to be released at the same time as *Front Mission 2* – the less accessible of the two







Bethesda Softworks has been suspiciously quiet about its much-vaunted racer, *X-Car*, which is now nearing completion. A D3D-specific version will be offered







Duke Nukem 3D is finally on its way to the Nintendo 64 (below). Unlike *Doom*, however, the game is being converted by the original codeshop, 3D Realms, and its polygon-based enemies will also distinguish it from the classic shoot 'em up's rendered sprites. 3D Realms has promised a fourplayer splitscreen mode to give the N64 version a deathmatch option







As the internal battles continue to rage within Virgin's US development arm, progress on its N64 title, *Freak Boy* (right) goes on. In the game, the player assumes the role of a robot who has the ability to 'become' different weapons



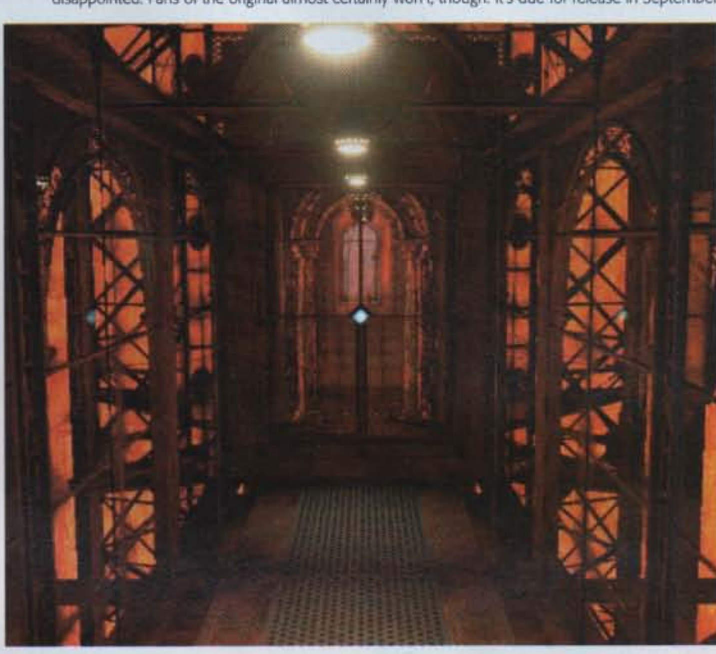


Treasure, whose recent N64 platformer *Go Go Troublemakers* was a hit in Japan, is set to release another, slightly more conventional, platformer on the Saturn. Entitled *Silhouette Mirage*, it will become available in Japan by Christmas





After two years of absolute secrecy, Brøderbund has released new shots of its *Myst* follow-up, *Riven* (left, below), from master puzzler Cyan. It's likely to feature the most detailed rendering ever seen in an adventure game, which is why, perhaps, those who expected the sequel to be in realtime will be disappointed. Fans of the original almost certainly won't, though. It's due for release in September



POWERSLIDE

As the power of 3Dfx's Voodoo chipset is becoming realised, it's being put to use in a fairly obvious genre: car racing. Australian-based codeshop Emergent is working on what could be the most attractive example yet









Comparisons with Sega's Model 2 racer, *Sega Rally*, are not idly made. The texture quality is easily as good, and thanks to an in-depth understanding of the 3Dfx native API, Glide, while the engine is pushing almost as much geometry. A coin-op version is due next year

Format:	PC/PS/N64
Publisher:	TBA
Developer:	Emergent
Release:	1st quarter '98
Origin:	Australia

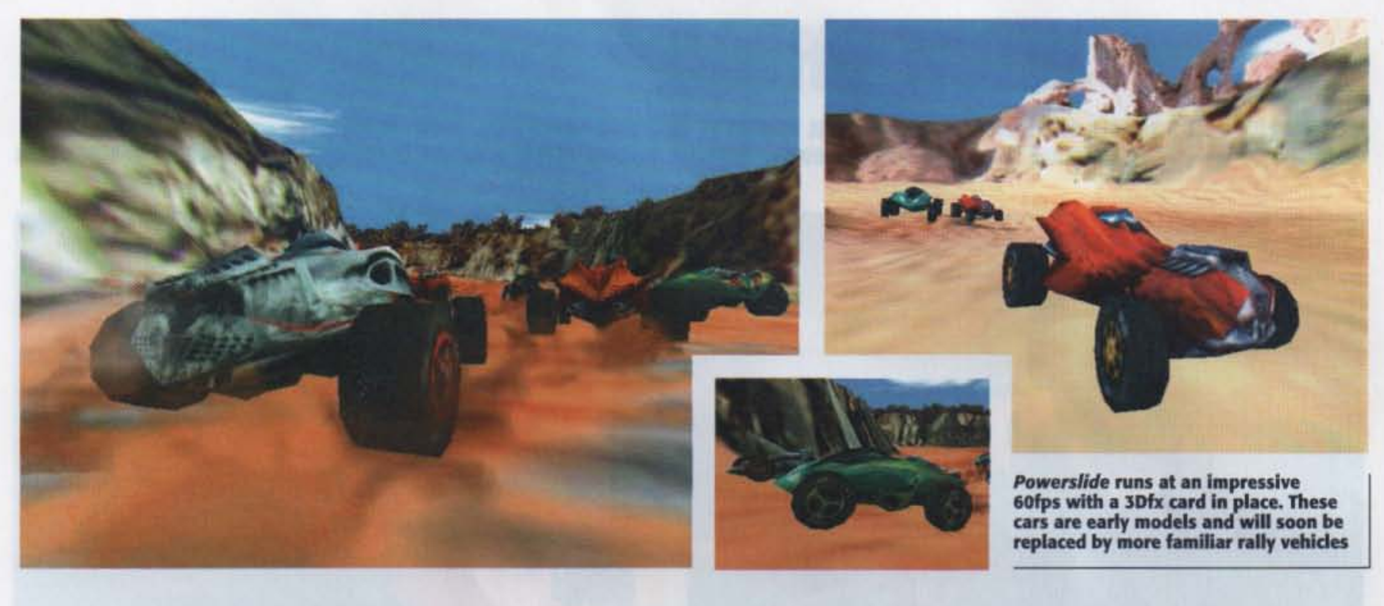
At the recent E3 show in Atlanta, Emergent Software's *Powerslide* received a huge amount of attention. 3Dfx Interactive gave the game pride of place in its lounge, and since then, according to Greg Siegele, Emergent's business manager, the phone has been 'ringing off the hook' with potential publishers eager to cut a deal. It's not hard to see why, as *Powerslide* boasts a number of impressive features.

For starters, it's the only racing game to be developed for the PC that will run at a consistent 60fps. When **Edge** played the early demo at the show, the sensation was that of a game only a short step away from Model 2 standard, thanks to a low-level 3D engine and the assistance of the Voodoo Graphics chipset. The game has been developed from the ground-up as a 3D card-only title, with the bulk of the code written to the 3Dfx direct API, Glide, and is handling somewhere in the region of 250,000 polygons per second. (Sega's Model 2 board, by way of comparison, can handle around 300,000.) Greg Siegele believes that, with *Powerslide*, his team is pushing 3Dfx's card to its limits.

'At 60fps, the card doesn't have a lot of pixel-processing power to spare,' he elaborates. 'The real problem with the current chips is that you have to send all the position, colour and texture information for three processed vertices to the card for each triangle that's rendered. This occurs even when vertices are shared, as is usually the case. Therefore, if you have to render a lot of small triangles to the screen, the PCI bandwidth becomes a limiting factor, which is why I think we're really approaching the limits



The cars' texture detail is already impressive, but is set to improve further



Powerslide **runs at an impressive 60fps with a 3Dfx card in place. These cars are early models and will soon be replaced by more familiar rally vehicles**

defined by the current crop of 3D cards.'

As with almost all racing-game developers at the moment, Emergent is concentrating most heavily on realising a true physics model: the car dynamics in *Powerslide* are such that drivers can readily perform wheelies, handbrake turns and even drive up on two wheels to negotiate the narrow gaps and ledges of the off-road courses.

So accurate is the physics that car upgrades (purchased throughout the game with prize money) will genuinely alter the driving experience, from the grip of the tyres to the stiffness of the suspension – all of which then interacts, on a wheel-by-wheel basis, with the track surface. As with Imagineer's *Multi-Racing Championship* (see p76), *Powerslide* offers many different surfaces to race on, and the player may encounter any number of them during a race.

The result is that cars slip and skid on gravel, wet mud and ice, and throw up great clouds of dust on the desert tracks, obscuring the view of drivers behind.

'The possibilities are only limited by the imagination of the track designers,' claims

SO ACCURATE IS THE PHYSICS THAT CAR UPGRADES WILL GENUINELY ALTER THE DRIVING EXPERIENCE, FROM THE GRIP OF TYRES TO THE STIFFNESS OF SUSPENSION

Siegele.' There'll be the more conventional tracks, allowing players to really get into the race craft inherent in the game, and then there'll be the extreme tracks that could open out into giant ice lakes with small dirt-covered islands offering traction. Other tracks might require a jump into a muddy pit, requiring a half-spin in mid-air, or an icy aqueduct giving the players a luge-like experience.'

The game is still very early in its development cycle, and won't see a PC release until the end of the first quarter '98, with PlayStation, Nintendo 64 and coin-op versions to follow later in the year.

Emergent's team is currently engaged in building ever-more-complex and realistic car models – the examples in these screenshots are only temporary, with the exception of the Volkswagen Beetle.

Now that the 3D engine is fully optimised (and the programmers have become better acquainted with the Voodoo card), potential *Powerslide* players should expect more complex models, with greater texture detail, in the final version.





The varied off-road tracks put Emergent's true-physics model through its paces





Powerslide **sees the PC on the verge of surpassing the 32bit consoles' racing games**

JUDGE DREDD

WITH A LICENCE NO LONGER CARRYING THE COMMERCIAL WEIGHT IT HAD TWO YEARS AGO, WHEN IT WAS THE FOUNDATION FOR A BIG-BUDGET MOVIE, GREMLIN'S GAME INTERPRETATION IS BANKING ON BIG BANGS FOR SUCCESS





At various points throughout the game, players will have to face more than just reprogrammed sociopathic androids. Heavier artillery appears towards the end of the levels, and usually features some form of futuristic vehicle intent on making a substantial impression on Dredd's energy bar (above left)





Gun turrets in the scenery will also have to be dealt with (above)

The on-rails shoot 'em up hasn't proved the most profitable genre in home environment in the past, its style better suited to the sort of short-term thrill usually provided by arcade machines. Gremlin is undeterred by this fact, however, and is intent on altering this popular conception by releasing a title it believes will achieve mainstream success as well as rule the PlayStation's lightgun gaming world.

Gremlin's confident mood is, in part, borne out of the potential of the licence involved – *2000AD*'s law enforcing agent from the 22nd century, Judge Dredd.

The choice of game genre is a brave one on two counts. First, given the licence involved here, most developers would probably have opted for some form of 3D adventure. Second, and perhaps most importantly, while in terms of competition, Konami's *Crypt Killer* and Atari's *Area 51* may be unlikely to worry Gremlin, the recently released, action-packed *Time Crisis* from Namco (see **E**48) just might.

As the unforgiving law enforcer himself, players wander through Mega-City One, Dredd's dark and decrepit hometown, charged with doing more than simply ridding its futuristic streets of any crime-loving citizens. Dredd's former partner, Tek-Judge Royston Bean, has lost his sanity, seized the Halls of Justice, and taken the city's mayor hostage. Furthermore, he controls a legion of androids to assist him in his deranged vision.

Dredd must therefore infiltrate 17 levels in order to track down and put an end to Tek-Judge Bean's maniacal antics. The journey is obviously packed with danger, with a constant supply of cyborgs appearing from behind most of the objects that make up the scenery, their guns aimed squarely at the player. Civilians, too, no doubt curious to find out what all the commotion is about, mingle dangerously with the inorganic lifeforms, and are best left unharmed if progress is to be made.

Androids are not the only danger lurking in the shadows, though, with computerised artillery such as century guns and armed vehicles also requiring immediate attention.

Dredd's task is eased somewhat, however, with the inclusion of weapon and health bonuses which will have to be found among the interactive scenery.

Whereas bonuses are discovered 'hiding'

Format:	PlayStation
Publisher:	Gremlin
Developer:	In-house
Release:	December
Origin:	UK





Unsurprisingly, the game's levels are linked together using cut sequences (left)



The attack by the game's deranged androids is never short of relentless, every new area presenting them with plenty of objects to use as cover





Despite being set in the bleak 22nd century, the game is very colourful

in television screens and other such objects which have to be destroyed in order to reveal them, occasionally the player is offered the chance to pick an alternative route through the level by shooting particular items such as door locks (indicated briefly by green arrows) before the camera moves swiftly on to the level's next section. The player's decisions and performance will therefore alter the outcome of the game.

Gremlin's decision to use prerendered backgrounds combined with impressive use of the PlayStation's lighting effects does much for the game's appearance, making this a very atmospheric-looking title. The ability to shoot most items as Dredd moves through futuristic tunnels, avenues and plazas saturated by closed-circuit television monitors, monorail trains and other 22nd-century vehicles, also helps players immerse themselves within Mega-City One's danger-filled streets and post-apocalyptic architecture. Furthering the realism is the inclusion of motion-captured adversaries who react differently depending on where they're shot.

The timing for a title featuring *2000AD*'s embodiment of zero tolerance might seem a tad out of skew, but Gremlin is quick to point out that a deal for the licence took a while to pin down because it didn't wish to have its game associated with Hollywood's 1995 interpretation featuring Sylvester Stallone as 'the future of law enforcement'.

GREMLIN'S DECISION TO USE PRERENDERED BACKDROPS COMBINED WITH IMPRESSIVE USE OF LIGHTING EFFECTS DOES MUCH FOR THE GAME'S VISUALS

Furthermore, the team argues that Judge Dredd is a character who is never out of fashion, strong enough to sell on his own without the need to tie the release to ride on the wave of hype accompanying another Dredd-related entertainment event.

A potential hit, then. Only one doubt remains: whether or not the popularity of the lightgun genre will be maintained until Christmas, when the game is due for release. E



Throughout the game, players have some control over the route they take, although some of the areas are more menacing than others (above right)







The prerendered backgrounds contain a great amount of detail

BUGGY

THE OFFROAD STYLE OF RACING GAME REMAINS A POPULAR ONE, ALTHOUGH GREMLIN IS DETERMINED TO APPROACH IT FROM A RATHER UNUSUAL – AND REFRESHING – ANGLE, OFFERING PLAYERS THE CHANCE TO PILOT REMOTE-CONTROLLED VEHICLES



Extra tracks and cars can be accessed by consistently finishing races in first place

As developers continue to appease the desires of console gamers by delivering more driving games, they are being forced to explore ways of individualising their product from that of their rivals. After trying out 4x4s, Gremlin's latest approach is to offer remote-controlled cars.

Six buggies, displaying the usual differing characteristics in terms of road grip, acceleration and top speed, are available, with each being better suited to one particular type of terrain found on the game's 16 tracks. Their style is are varied, with players testing their driving skills along undulating sandy beaches, treacherous urban cityscapes, and the vegetative overgrowth of jungles. As the difficulty level rises, the courses become increasingly littered with obstacles, but power-ups may be picked up along the way in order to make life easier.

Consistently finishing in first place will not only do much for players' chances of winning the championship, but it will further reward them by offering new, superior-specced buggies to compete against and eventually control, as well as secret tracks that become accessible as players improve.

A lot of attention has been paid to the physics of the vehicles, ensuring cars respond and handle realistically (and differently depending on their characteristics), albeit in a twitchy, remote controlled sort of way.

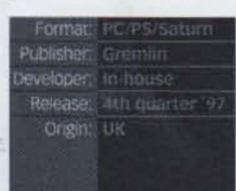
As well as championship, single race, and time trial modes, Gremlin has included a twoplayer splitscreen option that promises to retain the oneplayer version's speed, guaranteeing frantic competitive action.

Hopefully, with a healthy assortment of tracks, diverse vehicles and a simple, intuitive control system, *Buggy* will indeed deliver something refreshingly new in terms of gameplay when it's released towards the end of this year.





***Buggy* will feature plenty of power-ups (top), and frantic twoplayer action**



Format:	PC/PS/Saturn
Publisher:	Gremlin
Developer:	In-house
Release:	4th quarter '97
Origin:	UK







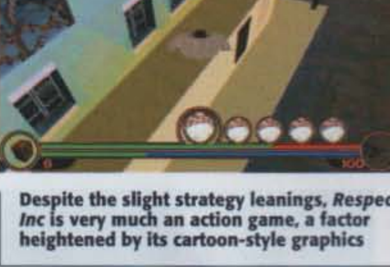


The finished game will allow players to race their remote controlled cars through a variety of courses. The vehicles themselves will handle differently from each other, and react to the surface of the circuits

RESPECT INC

THE STAPLE SETTING FOR VIDEOGAME SCENARIOS IS THE FUTURE, WHERE SPACECRAFT BATTLE ALIEN LEGIONS WITH LASER FIRE. PURE ENTERTAINMENT IS ONE SOFTWARE COMPANY UNAFRAID TO CONSIDER HISTORIC DETAILS AS ITS INSPIRATION...





Despite the slight strategy leanings, *Respect Inc* is very much an action game, a factor heightened by its cartoon-style graphics







***Respect Inc* will feature a variety of weapons, all appropriate to the game's 1920s setting**

Respect Inc will see players plunging into 1920s American mob culture as a Sicilian who has inadvertently arrived at the docks of Elmer City, the videogame equivalent of the Al Capone-ruled Chicago of the same period.

The aim of the game is to build a crime empire from the ground up, with the ultimate goal of ruling the whole city. To achieve this, players will have to gain respect, something measured by the character's suit – the sharper the togs, the more powerful (and therefore more respected) the gangster. However, earning respect is synonymous to making money, and like all good gangsters of the 1920s, this is achieved by intimidation. Buildings that have been 'intimidated' will produce a steady flow of income, which is collected by the player's accountants, who might also require a little persuading. The more buildings controlled (these change colour to indicate their loyalty), the richer the player. Other methods of acquiring money are possible, of course, and players will occasionally be required to rob a bank or a similar sort of high-street business in order to speed up the proceedings.

But simply going around extracting money from traders does not make a game by itself. Soon enough, players will face Bugsy, the right-hand man of crime lord Spatz, who practically owns Elmer City, and is understandably displeased to find a new contender muscling in on his territory. To stay alive players will have to deal with the interminable number of Bugsy's dangerous henchmen, as well as reclaiming any buildings that have been 're-intimidated' by them.

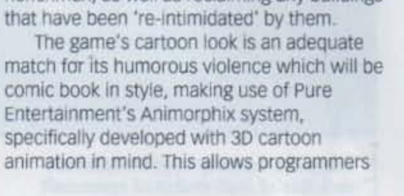
The game's cartoon look is an adequate match for its humorous violence which will be comic book in style, making use of Pure Entertainment's Animorphix system, specifically developed with 3D cartoon animation in mind. This allows programmers to alter the shape, colour and texture map of polygons in realtime, so that arms stretch when a character reaches for an object and heads and necks deform when punched.

Levels will take the form of a number of city blocks, with players required to intimidate every building in each area before moving on to the next stage. Furthermore, several functional buildings such as pizza parlours, garages, and tailors will assist players in recruiting safecrackers, hiring hitmen, or purchasing a new suit.

An authentic jazz soundtrack and typical weapons of the period (including shotguns, Tommy guns, and dynamite) are promised, and the AI is emotionally driven, so that certain cowardly characters will run off and return only when they've found reinforcements, while others will stand their ground irrespective of their perceived survival odds.

The game is currently being developed for the PC and PlayStation, with the PC version offering a twoplayer option and 3D accelerator support. With or without computer-specific enhancements, though, *Respect Inc* looks like it bears enough original traits to distinguish it from an increasingly me-too marketplace. **E**

Format:	PC/Playstation
Publisher:	Psygnosis
Developer:	Pure Ent.
Release:	Dec '97
Origin:	UK







According to his power, the character's suit changes throughout

COLONY WARS

Psygnosis' latest is aimed at gamers still harbouring fantasies about rescuing princesses and defeating evil empires. Any space-based daydreams may be realised thanks to some intuitive gameplay and excellent graphics...



Colony Wars **revolves around slick space combat and, despite the array of in-cockpit information (above), promises to be an intuitive arcade blaster**









Grand lighting effects fill the space setting

There has always been a significant crossover between videogames and science-fiction in all its forms, and the epic space-battle genre has preyed mercilessly on the fact that gamers also make up a substantial proportion of the sci-fi market. Both *Wing Commander* and *The Darkening*, for example, feature a space-combat scenario interspersed with FMV sections and featuring orchestral music to create a cinematic feel, and both scored highly with the punters – it's almost a sure-fire recipe for success.

Psygnosis is no doubt keen to cash in on this phenomenon with its latest project, *Colony Wars* – a fully fledged space-combat saga which combines some beautiful hi-resolution graphics with an immersive storyline and plenty of cosmic dogfights.

The player is a member of the League of Freeworlds, which is currently battling for its freedom from imperial forces on Earth. His task is to fight through a series of non-linear missions in six different craft (scouts, fighters, bombers, interceptors, etc), interacting with more than 50 different types of friendly and enemy ships, all of which boast a high level of intelligence. In effect, the game allows players to relive those 'Star Wars' fantasies which form part of so many film goers' psyches.

As well as the huge diversity of craft and the wide range of missions on offer, *Colony Wars* boasts some outstanding visuals. Realistic lighting, beautifully designed craft and background scenery plus variable camera views give the game a classy sheen, and the promise of high frame rates and smooth animation should make it an even more attractive proposition.

Given all the factors in its favour, *Colony Wars* may well usurp Origin's FMV-laden schlock sci-fi effort, *Wing Commander*, as the quintessential space shoot 'em up. Having only one other title, *I-War* (see **E**48), as serious competition bodes well.



Format:	PlayStation
Publisher:	Psygnosis
Developer:	In-house
Release:	November '97
Origin:	UK



The game features over 50 different varieties of well-designed spacecraft

THE FIFTH ELEMENT

Luc Besson's acclaimed cinematic science-fiction epic is being translated into videogame form, thanks to French firm Gaumont. But will it offer more than just a collection of special effects?







***The Fifth Element* will see players exploring their surroundings as either Korben Dallas or Leeloo (pictured). An inventory will not be available, as the emphasis will remain firmly on action**

French publisher Gaumont obviously realised a while ago that certain films make perfect videogame material – the company set up a multimedia branch in 1995 to deal exclusively with movie adaptations. When news of 'The Fifth Element' broke, it quickly set about getting developer Kalisto to convert Luc Besson's sci-fi project into polygon form. Collaboration between the two industries did not prove to be a problem – Besson himself read the game's scenario to ensure that it remained true to his own vision, and in return, Kalisto was given access to the script, early sketches and preview screenings. The developer was also invited to visit Digital Domain, the firm responsible for the movie's special effects.

As a result, this action-adventure game follows its Hollywood counterpart closely and even includes elements deleted from the final version, making it something of a director's cut. The game's main characters are all taken from the movie, although Kalisto has added a few more in the interest of gameplay.

The player's task, as Korben Dallas or Leeloo, is to collect four element stones, with each of the 15 levels requiring the completion of several sub-missions. The game will also include a puzzle/exploration aspect – although players will not have to worry about dealing with an inventory, as switches will have to be found in order to open doors and gain access to secret passageways.

The PC version of the game, which is based on the *Nightmare Creatures* engine, will support various 3D boards. However, due to an existing working relationship, Kalisto will focus primarily on PowerVR.

Little else is currently known about the project, but the developer promises that it will not only recreate the rich environment of its cinematic counterpart but also offer gameplay to match. **Edge** hopes that the 'all style and no substance' accusations directed towards the movie will not apply to its videogame counterpart.

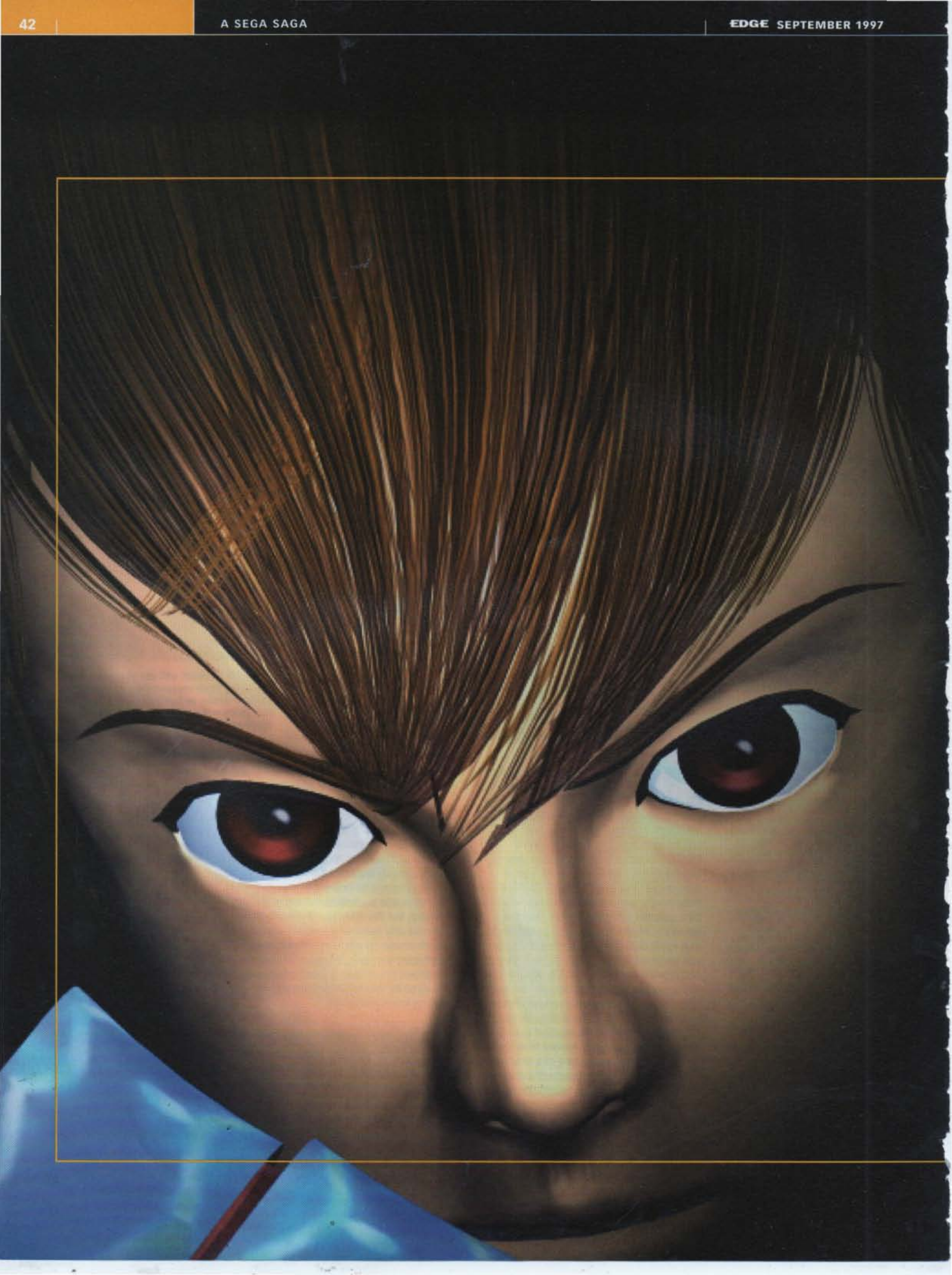


Format:	PlayStation/PC
Publisher:	Gaumont
Developer:	Kalisto
Release:	Spring '98
Origin:	France





These PC shots are from a particularly impressive running version shown during Atlanta's E3 event



A SEGA SAGA

As the format of choice for console RPG players, the Saturn is host to a wealth of brains-before-brawns titles. Now Sega is looking to deliver its coup de grace – *Panzer Dragoon Saga*, combining the series' fantastic visuals with up to four CDs' worth of gameplay

Despite the Saturn's struggle to hold on to a significant share of the console market, the 32bit machine can still lay claim to some of the industry's most memorable games. Indeed, back in 1995, one of the first titles from its limited early catalogue to truly impress western gamers, at a time when Sega's machine was still only available as a Japanese import, was *Panzer Dragoon*. Although hardly a revolution in terms of gameplay, it nevertheless represented the kind of flair and excellence in videogame design that only the Japanese seem able to achieve.

Its sequel, *Panzer Dragoon Zwei*, took the 3D environment one step further, providing as engrossing and polished an experience as its predecessor, albeit in a rather shortlived form. The ingame graphics were not the only visual aspect of the game retaining the quality of the original – the prerendered sequences were also as stylishly choreographed and exuded the same cinematic feel, for which it deservedly received much acclaim.

When news first broke of this latest instalment in the series, ▶



◀ **Edge** was not surprised to learn of its RPG status. If ever there was a game whose accomplished melange of fantastic settings and characters was perfectly suited for an extended adventure-based quest, then *Panzer Dragoon* is it.

Unsurprisingly, the game takes place in the same environment as its anterior incarnations. Once a prosperous locale thousands of years ago, the world is now on the brink of extinction. The use of biotechnology and genetic engineering in an attempt to clone the world's first inhabitants resulted in hideous and aggressive monsters. Over time, the world has deteriorated to the point where its current population has lost the power of the 'Old Century' it once held and is forced to live in permanent fear of the savage nature of their ancestors' creations.

In an attempt to get the world back on its feet, one country, known as The Empire, explored the ruins of the Old Century cities and military installations, acquiring a multitude of weapons and other similarly useful items, and eventually finding the all-important 'relic'. However, corrupted by its newly-found power, The Empire does not salvage the world but instead brings a legacy of war which claims thousands of lives of the planet's inhabitants.

Out of the ruins of The Empire's tyranny, several groups of scavengers and hunters have survived by populating the wastelands.

The game begins in one such bunch of ruins, guarded by a group of former hunters. The youngest member of this crew is 'Edge', the game's central character. As is often the case with this sort of situation, a recently discovered relic buried among



The dragon will evolve differently, taking on alternative characteristics depending on how players treat the creature

















***Saga* takes the best elements from the fascinating *Panzer Dragoon* universe and ties them into a cohesive storyline as featured in the game's comprehensive opening FMV sequence**





***Dragoon Saga* will feature the same quality of graphics and range of weapons that have made the series world renowned**

the building remains being protected by the mercenaries proves too important an item and an unprovoked attack by an aerial fleet soon follows, killing every hunter but the game's hero. Left for dead, Edge is saved by a dragon who shows him a vision of a yet-to-be-discovered strangely shaped relic, and the two depart on a quest to find it, as well as avenge his friends' deaths.

In typical RPG fashion, information will need to be extracted from various characters Edge meets on his travels. This happens chiefly in the game's villages where valuable objects can also be found. The exploration nature of the game has resulted in the obvious necessity to abandon the on-rails approach of the prequels. As a result, Edge is free to roam freely through his 3D surroundings, either in towns or as he takes to the skies on the back of his flying companion.

The game's combat sections take place in the field stages, and are viewed from a topdown perspective. Sega has adopted a traditional turn-based system, with the usual experience and hit points, which contrasts starkly with the all-out action of the previous *Panzer* titles. Edge's enemies mostly take the form of the descendants of the world's genetic mutations created in the now distant past.

Due to the game's character duo, the control system is a complex, yet logical, affair providing a variety of options when in exploring or attacking mode. Interaction between the game's characters and objects is made easier with Saga's 'Lock-on Communication System' which will automatically target a neighbouring person or item.

The battle graphics are all presented in realtime, with the game's 'Active Chase System' adding a strategy element by highlighting danger areas and allowing players to change their position accordingly before the enemy's next attack wave.

Interestingly, as the game progresses, Edge's dragon companion evolves through one of several developmental paths determined by the player's actions. By strengthening and restoring its shell, the winged organism can evolve into a new form, and this evolution has a significant effect on the gameplay. Depending on how it's raised, the creature's combat and flying ability together with other essential skills will be affected, so that alert players can breed their dragon to perform better in certain situations so as to suit their individual preferences.

Team Andromeda, the group behind the first two titles of the series, is achieving a fantastic-looking RPG with *Saga*, continuing the graphical splendour of its predecessors and typically smooth animation, despite the obviously higher amount of detail, particularly during the town and village sections.

Panzer Dragoon Saga is currently planned for a September release in Japan, possibly on as many as four CDs, and although it's difficult to predict how such a title will be received in the west, a European version is on the cards. However, expect the translation of the game's 1,500 pages of text to slow the process down somewhat.



The game will use the previous games' targeting system, by automatically selecting a weak area of an opponent or item

The Play people

Five years ago, the PlayStation was an aborted SNES add-on; now it's the biggest thing in the games industry. Edge gets the inside story on its birth from two key employees of Sony Computer Entertainment, and finds out what the company has in store for the future

Sony Computer Entertainment was formed just four years ago, yet it is now one of the most powerful forces in the videogame industry. The company's creation, the PlayStation, is still selling at an astronomical rate, despite the arrival of superior technology in the shape of the Nintendo 64, and the long-running rivalry with Sega's accomplished 'home-arcade' machine, the Saturn. Conservative estimates now put the worldwide installed userbase at 16 million units – a major achievement given the firm's standing start.

If any single person can be credited with this success, it's **Ken Kutaragi**. In the early 1990s, he was in R&D at Sony, researching the company's first proposed hardware venture into the world of interactive entertainment – a CD-ROM unit for the SNES called the 'PlayStation'. When this deal fell through due to Nintendo's long-standing mistrust of the format, Sony decided not to ditch the PlayStation technology completely but to use it as the basis for a standalone console – codenamed PS-X.

Once again, Kutaragi was put in charge. His aim was to design a chipset that could produce the kind of fast realtime 3D graphics only previously seen in the arcades. This time his mission was successful, leading a supremely confident **Akira Sato** (then chairman of SCE) to announce, 'If it's not realtime, its not a videogame.' Since then, of course, the machine has reverted to its original title and, under Kutaragi's guidance, effectively buried the SNES, along with the Mega Drive, 3DO, Jaguar, PC Engine and, some would say, the Saturn.

But the PlayStation did not survive on R&D talent alone. **Teruhisa Tokunaka** joined Sony at about the same time as Kutaragi and became executive vice president of SCE when the company was established in November 1993. He brought with him a lifetime of business acumen gained through various positions in Sony's legal affairs, communications and corporate strategy divisions. In April 1995 he was made president and CEO – a role which reflects his influence on the PlayStation's huge financial success. However, even he was not prepared for the massive impact the PlayStation made. As he told **Edge**, 'When SCE started, I prepared three business projections – one high, one medium and one low – based on how well I thought the machine would sell. The business SCE is doing is substantially higher that the highest of those forecasts I initially made!'





(From left) SCE's impressive glass-laden HQ, located in Tokyo; chairman and CEO Teruhisa Tokunaka; *Pa Rappa the Rappa* creator Masaya Matsuura showing off one of the game's humorous cartoon-style characters, the martial arts tutor Master Onion Head, who kicks off the game's proceedings

When asked about the reasons for the machine's success – especially now the N64 has been released – the two men respond very differently. Tokunaka offers a reasonably detailed analysis: 'The first thing I did when I joined SCE was talk with the software companies. Mr Kutaragi and I visited lots of them to try and ascertain what their hopes were and how they felt about the PlayStation and the industry in general. And only then did we prepare our business strategy. Sony's relationship with thirdparty developers has been a key element in the PlayStation's success. They have to believe in our commitment, in our business plans. They must believe in the PlayStation.'

Sony's technical wizard, however, remains reticent and self-effacing about why the machine is so successful. 'Please ask the customer,' he shrugs. 'Or alternatively, ask my sons. I do not insist they use the PlayStation – we have a SNES, a Mega Drive and two PCs

at home – but they prefer it. I sometimes ask them how they feel about the Nintendo 64, and my elder son, who is 16, told me the software reminds him of 16bit software.'

Kutaragi is equally difficult to pin down when asked about his favourite game developers, or quizzed about his predictions for the future. Questions about PlayStation 2, for example, are evaded politely, in a manner typical of Japanese videogame insiders who are wary of giving too much away. He will not, for example, confirm whether the machine is set to jettison CD in favour of a DVD drive. 'Maybe it will,' he dissembles, 'but I said maybe. How do you really differentiate between the two? For consumers they represent the same thing. Who cares? If DVD becomes a standard for the PC and lots

there is much more work to be done there. 'We cannot always talk of the next technology,' he insists. 'As an engineer, it is tempting to abandon the old machine and release updates with enhanced clock rates or processors, but we should not. We have to make sure the current system remains a big infrastructure for customers, developers and publishers.'

But that doesn't mean he refuses to discuss the future. One of the things he is most excited about is the way the Internet enables gamers from different countries to talk to each other about their favourite titles – a situation which may affect the types of games that prove popular in different parts of the world. As he puts it, 'Because Japan has such a different culture, many western games are not

States.' There is a hint here that SCEA is thought of in Japan as an unruly child which had to be brought into line – which is accentuated by the fact that Kutaragi, an old-school member of SCE, has recently been appointed chairman of SCEA. Obviously, the child needed closer supervision...

This move away from R&D has not prevented Kutaragi from fantasising about the future of gaming itself. Although he is certain that SCE will still be making games in ten years' time ('We will still be big business. Maybe we'll even get involved in movies, entertainment, media...'), his vision of the industry is alien to contemporary gamers. 'In terms of computer graphics, systems become ten times more powerful every three years. If such trends continue, some day images will



Masaya Matsuura (far left) was in a band for ten years before designing two music CD-ROMs. *Pa Rappa*, his first console title, has revitalised SCE's own software output. PlayStation creator Ken Kutagari and Teruhisa Tokunaka (right) have been instrumental in the success of the machine itself

of companies agree to support it, then I see no reason not to use it. In fact, it would allow us to offer owners the chance to download games from the Web – which is a nice concept.'

Similarly ambiguous replies greet many of the queries regularly aimed at PlayStation head honchos. Probed about a possible standalone jolting pack for the PlayStation, he answers, 'These motion-feedback devices are difficult to use,' and on the subject of whether the PlayStation 2 will be compatible with the original machine, he wavers before offering, 'It is too premature for these questions. Historically, though, no system has ever offered pure backward compatibility, except the PC.'

Edge senses, however, that Kutaragi's reticence is not entirely due to the standard Japanese approach to difficult questions. He still has faith in the original PlayStation and feels that

Kutaragi's aim was to design a chipset that could produce the kind of fast realtime 3D graphics only seen in arcades

released here. However, the Internet is now allowing consumers to exchange their cultures – something which will happen a lot more in the future. We have established an international software department in Japan to encourage this process.'

The cultural differences between gamers also interest Tokunaka. When asked how independent Sony Computer Entertainment America is from its Japanese counterpart, his reply is faintly derisive: 'SCEA did start to become independent from Japan – it is understandable for American people to be very independent – but recently we have become much closer. Now, we decide our business strategies and communicate them to the United

be beamed directly onto the retina. But even that is not the final goal. I think, just after fixing the sound and graphics problem, we will approach the field of simulating true emotion, character and environment in realtime. So there is still lots to do.'

If this level of technology is to be reached, it is certain that die-hard visionaries like Kutaragi will have to be there at the forefront, pushing back the boundaries. When the PlayStation was being developed, his R&D team went for days without sleep, and there is still something of the obsessive about him. When asked about the PlayStation's principal competitors, he ponders for a long time before saying, 'The main competitors? Sleeping and eating.'

Sony Computer Entertainment games

After a shaky start, SCE's inhouse team is now producing original, successful software


Motor Toon GP


Jumping Flash


Philosoma

Although SCE's success with hardware is beyond question, its track record with game development was for a long time less remarkable. Symbolic of this was the fact that the 'killer app' which accompanied the launch of the PlayStation was not an inhouse effort, as it would have been with Sega or Nintendo at the helm, but Namco's *Ridge Racer* – not even an original game but an (admittedly very good) arcade conversion.

In terms of software, then, SCE showed its inexperience almost immediately. *Philosoma* was a lacklustre horizontally and vertically scrolling shoot 'em up which had a few token 3D effects but offered nothing new. *Jumping Flash* did at least present an impressive true-3D environment and a few fresh gameplay ideas, but it was let down by its lack of longterm challenge. *Motor Toon GP* displayed some visual finesse but, like *Flash*, lacked the longevity of a classic.

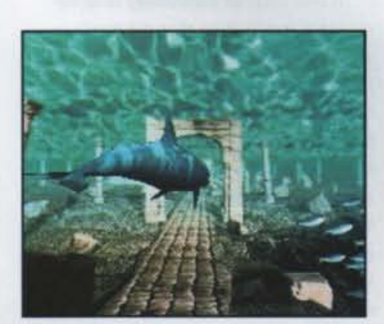
While sequels to *Motor Toon* and *Jumping Flash* improved on their predecessors, they still failed to make the impression NCL or AM inhouse games continue to make. However, by March 1996, SCE's London team had come up with one of the PlayStation's finest titles, *Total NBA*, and had two more promising games in development. It was clear that Japan would have to find its own niche in order to make a significant contribution to the machine – a fact perhaps recognised by Tokunaka when he told **Edge**, 'To be successful in the future, we must extend the game industry and make videogames enjoyable to everybody – not just the gamefreaks.'

It was clear that Japan would have to find its own niche in order to make a significant contribution to the machine

This could well have been the reason for Sony's decision to take on musician Masaya Matsuura and his unusual interactive music project, *Pa Rappa the Rappa*, in which the player has to copy everything his rapping mentor does, Simon-style. The gameplay could be described as unique, demanding an unprecedented level of audiovisual awareness from the player.

Surprisingly, perhaps, *Pa Rappa* became an instant hit in Japan, where quirky original concepts are welcomed more readily than in the driving game and beat 'em up-obsessed west. The game also did exactly what Tokunaka had wanted in that it opened up new markets – according to recent statistics, a previously unheard-of 40% of *Pa Rappa* players are women. It's not surprising, then, that the title was quickly followed by two more high-concept titles, *Depth* (an 'ambient musical adventure) and *Gambare Morikakun 2* (a virtual pet-style affair).

Since *Pa Rappa*, SCE has released intelligent puzzler *IQ* and is working on a promising videogame version of popular anime saga *Ghost in the Shell*. With the firm's London arm putting the finishing touches to the potentially excellent *Rapid Racer*, Sony's software is now truly beginning to catch up with its hardware.


Depth


Ghost in the Shell


Gambare Morikakun 2

Profile

Edge talks to the creator of *Pa Rappa the Rappa*, Japanese musician Masaya Matsuura







Although musicians have been known to put their name to 'experimental' PC CD-ROMs – Peter Gabriel is a name that immediately springs to mind – it's rare that they actually sit down and write a videogame from scratch. But that is exactly what Osaka-born artiste **Masaya Matsuura** did last year when he created *Pa Rappa the Rappa*, the recent PlayStation hit in Japan. The game, which, as well as being pioneering in an audio sense, uses a wonderfully distinctive graphical style with great characterisation, features simple-but-entertaining gameplay.

This was not his first venture into computer technology, however. After spending ten years in electronic music group PYS-S with vocalist Chaka, he moved on to produce soundtracks for movies and commercials and finally began to create his own music CD-ROMs, starting with *The Seven Colours* in 1993. This multimedia title aimed at musicians won the Multimedia Grand Prize in '93 and paved the way for two more interactive music titles, *Tool-X* and *Tunin' Glue*.

'Musicians always use ready-made software, which I find incredibly frustrating,' says Matsuura in an attempt to explain his move into CD-ROM. 'I wanted to create something from zero by myself, using tools that nobody had used before. That is why I got into videogame software creation.'

Pa Rappa the Rappa, though, was his first true console game, and like his previous works it was heaped with acclaim, winning the 1996 CECA Special Judges Award and the Japan Software Special Judges Award. It has been widely credited with giving rise to a whole new game genre for the console, and attracting a vast new audience in the process.

Like its audience, it seems that comment on rumours that he is working on a sequel, it is doubtful that *Pa Rappa the Rappa* will fade quickly from gamers' memories. Sony is planning a range of *Rappa* merchandise, as well as a soundtrack, and the game's eponymous character has already been incorporated into the otaku mass consciousness. At last year's Tokyo Game Show, for example, several punters could be seen walking about in handmade *Pa Rappa* hats, and some obsessed gamers are now trying to clear each stage with the sound turned off – a similar challenge to completing *Ridge Racer* with no visuals.

Matsuura himself has exchanged his contract with Sony Music

Matsuura has exchanged his contract with Sony Music Publishing for one with SCE – the first musician to sign with a games firm

Matsuura found the *Pa Rappa* experience liberating: 'By creating this game, I discovered another side to music – I was able to see it from a different angle.'

Although Matsuura would not

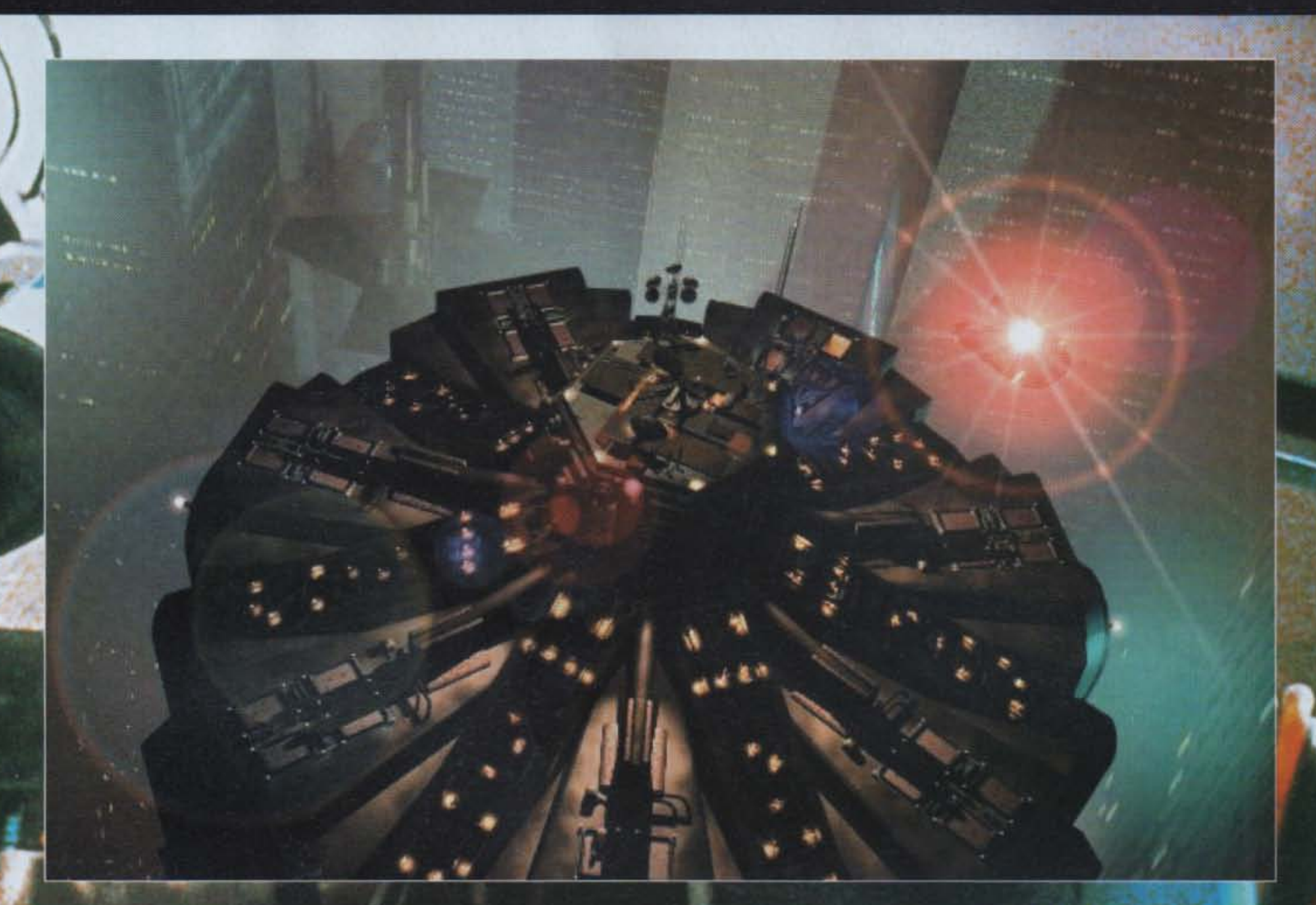
Entertainment for one with SCE – making him the first musician ever to sign with a game company – so it is likely that PlayStation owners will encounter his floppy-hatted creation again.











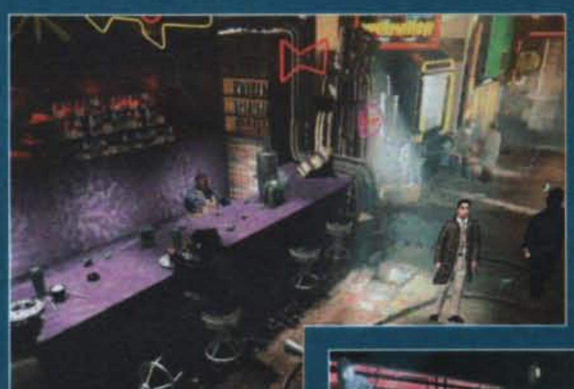
BLADE RUNNER

How do you create a videogame that does justice to one of science fiction's most enduring classics? Westwood Studios reckons it knows...

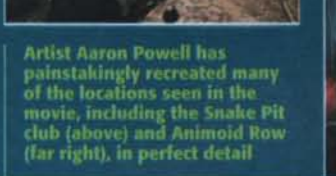
The year is 1994, the place California, and although it's February, it's 65 degrees in the shade. **Martin Alper**, the president of Virgin Interactive, is on a telephone call. He ends the call with a nod and then a smile. Two minutes later, an internal memo carries the news: 11 years after the movie's release, the 'Blade Runner' licence is up for grabs, and Virgin has been given first refusal.

It takes almost a full year to iron out the details. There's much backtracking, legalese and confusion. The conference calls rack up, the meetings seem endless. The Blade Runner Partnership, a company set up to handle the myriad rights to the movie, decides that Virgin must bid for the licence, not just financially but also creatively. Though Virgin never knows which firms it is up against, a number of prominent developers are mentioned, in the UK as well as in the States. At one point, Alper hears that the Japanese giants may put in a proposal first.

Meanwhile, in neighbouring Nevada, developer Westwood Studios is putting the finishing touches to a realtime strategy wargame that it is convinced will change the face of PC gaming. It's February 1995, and vice president **Louis Castle** is pulled from his production meeting to answer a call. He's not happy – Castle doesn't like to be interrupted when he's in full flow with the team. Two hours later, he's drawing sketches, flipping madly through piles of illustrations and talking at the speed of light to Eric Yeo, Westwood's lead games designer. 'Virgin ▶







Artist Aaron Powell has painstakingly recreated many of the locations seen in the movie, including the Snake Pit club (above) and Animoid Row (far right), in perfect detail

◄ need a concept document. They're going to bid for "Blade Runner" and we've got two months to do it.' He never makes it back to the meeting.

Two-and-a-half years later, *Blade Runner* is almost finished. After a disastrous year for Virgin – a year when internal development slumped to an all-time low and costs spiralled out of control on *Toonstruck*, an ill-fated adventure in the *Sam and Max* mould – the president, Martin Alper, desperately needs a hit. Only Westwood's *Command & Conquer* follow-up, *Red Alert*, has done the business. *Blade Runner*, he's certain, will be equally successful.

'Blade Runner' throws up a number of unique problems for any videogame developer

Louis Castle is in his thirties, but he acts like a hyperactive schoolkid who has just remembered that tomorrow is Christmas. As **Edge** waits to be introduced, he disappears into one room, emerges, then dives into another, before disappearing down a corridor. After a few moments, he returns, claps his hands and leads the way into a relatively small office. There's a widescreen TV in one corner, a couple of PCs on the desk and a huge leather swivel chair – the only apparent concession to the corporate style so beloved of American software companies.





Comparisons with the movie are inevitable. However, the team had no access to original props and design documents – only a laserdisc version of 'The Director's Cut' on which to base the ingame art and cut-scenes. The scene above, showing McCoy in the police Spinner, closely resembles the same scene with Deckard as he's picked up by Gaff

Within minutes, he's off, struggling to get the words out quickly enough. It appears that speech is almost a nuisance, a necessary but inefficient evil. 'Before you ask any questions,' he begins, 'I'm going to run through the basics.'

An hour of hi-octane delivery later and **Edge** has learned the following: that just three months after winning the licence, Castle and his team had the bare bones of a game engine that closely resembles the final build; that despite having completed 90% of *Blade Runner* almost a year ago, it couldn't release screenshots, or reveal anything about its groundbreaking technology, for fear of imitation; and also, that *Blade Runner*, much to **Edge**'s relief, will not be an interactive movie.

'When we spoke to the Blade Runner Partnership, it was clear that they knew we could deliver graphically, that we could do the job. What they were most concerned about was what we would do with the story treatment,' confides Alper. 'One thing that we didn't want to do was make a game that was a movie that you just point and click your way through.'

'Blade Runner' throws up a number of unique problems for any videogames developer. It has been around for 15 years and has been seen by just about every sci-fi fan in the world. It has been re-released both at the cinema and on video a number of times, each time gaining a wider and more devoted audience. In short, with the exception of 'Star Wars', this film is probably better known by videogamers than any other. It follows, therefore, that its target audience is unlikely to put up with a shoddy cash-in – fans are going to want to feel as if they're 'inside' the film. Castle can almost feel them watching him...

'It does feel a little as though the eyes of a million fans are upon us,' he says, grinning. 'You know, the audience has seen this film in PAL, in NTSC and at the cinema for 15 years, and some of them have watched it so many times that they know every little detail. We needed to create a game that would exceed that level of interest, that level of detail, or at least be equal to it.'

And that is the primary motivation for the creation of a unique game engine which marries action sequences and point-and-click adventure elements to create what Castle proudly describes as 'a realtime 3D adventure'. *Blade Runner* is







Syd Mead, responsible for much of the design in the movie (above), was hired as consultant for the game. The first BR game (left), by CRL, 1985







Lead artist Powell knew that recreating the film's neon-lit ambience and lighting effects was vital if its 'future noir' atmosphere was to be retained

nothing less, he claims, than a new kind of videogame. It may sound like hyperbole, but after seeing the title running on his office Pentium, **Edge** is inclined to agree...

From the outset, Westwood was determined to tell a good tale – to create a great detective story. The technology, therefore, had to be driven by the needs of the game design, and not the other way around (as is so often the case). As Castle delivers his speech, it becomes clear that this principle is central to every aspect of the game's numerous parts: the art direction, the graphics engine and, most importantly, the script.

It was never going to be easy, recreating the stunning vistas and atmospheric set-pieces of the movie. **Aaron Powell** (who collaborated with Rick Parks on the initial *Blade Runner* demo), began work on the graphics in the summer of 1995, creating what Castle describes as 'some of the most stunning computer art I'd seen'. After long nights studying the film, pausing the laserdisc and watching and re-watching the intro sequence, Powell had developed a feel for the dystopian megalopolis in which the film was set. He used to study architecture and he put his skills to good use recreating hi-res images of the city's mixture of gothic and futuristic buildings. Not only is he one of the movie's biggest fans, but he's also an all-round film buff – his first job was in a video store. There's not much he doesn't know about films and now, it seems, there's absolutely nothing he doesn't know about 'Blade Runner'.

'It was a little frustrating at first,' he recalls. 'The problem with "Blade Runner" is that none of the props and very little of the original concept art is around any more. When the film ran into budget problems mid-production, many designers and artists and craftsmen went without being paid, and so they took all their work with them when they wrapped shooting. Consequently, the only reference material we had was the movie itself.'

Despite Powell's expertise, Castle realised very quickly that they would need some help – if only to ensure that The Blade Runner Partnership would approve of their interpretation. To this end, world-famous designer Syd Mead, the creative director of the movie, was enlisted as a consultant. Days were spent talking concepts with the man who, along with special effects supremo Douglas Trumbull, was largely responsible for the look of the film. The key, he explained to them, was that everything was retro-fitted. The buildings were built on top of older buildings, older, 20th-Century streets lurked in the darkness beneath the futuristic walkways and boulevards of the tower blocks, and everything, absolutely everything on set was made from the cheapest materials they could find.

'When we came to designing stuff like coffee machines, gadgets and weapons, we just imagined that we had to make them out of everyday items like old radios and hub caps because that's how they did it in the movie,' explains Castle.

By the end of 1995, LA 2019 had taken shape at Westwood and it was looking good. So good, in fact, that Castle and senior producer Donnie Blank knew they could sacrifice none of the detail of the renders ingame. Work on the game engine had been progressing steadily since February, when it had been decided that *Blade Runner* would have to be realtime 3D, but Westwood hadn't counted on the kind of detail required. A new approach was needed.

It was obvious that *Blade Runner* would have to be a high-spec title, with the usual hardware scaleability dropped in favour of a high benchmark for both the rendered and ingame graphics. It would have to be in hi-res, run with millions of ▶





The original pyramid tower constructed to represent the Tyrell Corporation headquarters took months to build, and was filled with miles of fibre-optic cable. The rendered version seen in the game (left) took considerably less time, but is just as effective. The scene is so evocative of the film that Westwood knew it had to include it

The *Blade Runner* team outside Westwood's Las Vegas offices. Kneeling in the foreground is Louis Castle, simultaneously the creative director, executive producer and art director on the *Blade Runner* project, as well as vice president of Westwood Studios. On his right is the game's producer, Donny Blank

◀ colours, be fully animated, and never drop below 15 frames per second – and all on a P90. This may not sound too impressive compared to today's 3Dfx titles until you realise just how the game engine works.

'It looks a little like those backgrounds you see are all prerendered. In actual fact, they're not. They're rendered in realtime,' explains Castle. 'Because we're combining action with adventure, we need to make the scenes interactive, and to do that you have to be able to walk in and out of the objects. Most of the sets in the game have between two and three million polygons, but only a million are being created for each scene, because some, obviously, are obscured by objects nearer to the camera, but it's all realtime. If we wanted, and if people had P200s everywhere, then we could have the camera following your character, like in *Tomb Raider*, but we've fixed it to keep the minimum spec a P90.'

By way of proof, Castle leans across and pushes a key. Where there was once a richly detailed street scene, there is now a mass of bright colours. It's the Z-buffer. A static render wouldn't need one. Whether the engine really is capable of moving through such hi-res scenes in realtime is debatable, but the onscreen result is an environment that has all the hallmarks of a truly 3D world. The player's character can wander in and out of the scenes and even walk behind glass (which is a true transparency). In a firefight (point the mouse cursor on the opponent and click), enemies hide behind cars, other people and stalls, and the hero turns 'into' the screen to fire. Quite how Westwood is able to move that many polygons around in realtime is a puzzle, but Castle is happy to elaborate...

'The way that we're able to get as much stuff moving onscreen as we do is largely down to our video-compression routines. We're really not moving as much





Deckard's apartment (right) was originally designed by Syd Mead to reflect the 'retro-fit' style of LA 2019, as well as the bachelor lifestyle of the Harrison Ford character. For the game (left), Aaron Powell took a more conventional approach, but included many of the props familiar to fans of the movie, such as the ever-present whisky bottle











Lead artist Aaron Powell, VP and executive producer Louis Castle and producer Donny Blank find inspiration in the neon-bathed alleys of Vegas (top). These scenes (above) are all true 3D, but the camera is fixed

data as it looks. With the lighting effects, it looks like an impossible amount, but we've found new ways of rendering to the screen.'

As well as compression routines, lead programmer Michael Legg also came up with an innovative way of creating the many lighting effects that give the environments their distinctive look (particle effects, which are used extensively in the game, are notoriously heavy on the processor). He created a geometry buffer, entirely separate from the Z-buffer, which still contains all the depth information but also holds data for special effects such as lighting and rain, which takes the pressure off the CPU.

By far the biggest technical innovation, however, can be found in the game's character modelling. *Blade Runner* uses a hybrid voxel/poly system to render the characters in realtime, an idea first mooted in Castle's initial brainstorming sessions with the hastily assembled team in early 1995 and which allows a level of detail and smoothness that a standard polygonal model couldn't hope to match. Each model is made up of no less than 32,000 polygons – some four times the amount used for the fighters in Sega's Model 3 coin-op, *Virtua Fighter 3*. However, the result is not as impressive as those figures might lead some to believe, because the polys are all tiny and of a more or less uniform size – they're used in a similar way to voxels ('volume pixels'), as small building blocks. The system works best when the characters are in the distance, because each polygon is closer to a single pixel in size. Zoomed in, the models look a little rough around the edges, much like voxels. Perversely, the more polygons there are in a model, the faster the engine can render, as the ratio of pixels/polys gets closer to 1:1. This has some incredible ramifications, particularly for Westwood's next title, which Legg claims could boast three times the level of detail as *Blade Runner*. The only barrier to the complexity of the characters is the storage space

> It may be a point-and-click adventure, but *Blade Runner* is essentially a simulation

available. Due to the sheer number of models required by the game, *Blade Runner* will be a 4-CD title.

In mid-flow, Castle suddenly stops and says earnestly, 'All that technical stuff is fine, but it's all secondary to the story and the gameplay. *Blade Runner*, for us, has to be a real detective story, and in order for it to be a real detective story, you can't know the ending. You play a Blade Runner, but not Deckard. We didn't want to just recreate the movie's plot, although those events run concurrently with the game that you'll be playing. We didn't want people to go into this game being able to predict everything.'

The player's character, 'McCoy', is obviously very similar to Harrison Ford's Deckard, but just different enough to give the player the feeling that they're part of the world defined by the movie yet not stuck in the movie itself. It may be a point-and-click adventure, but *Blade Runner* is essentially a simulation. Events happen in realtime and characters go about their business 'off-camera'. Time is of the essence here.

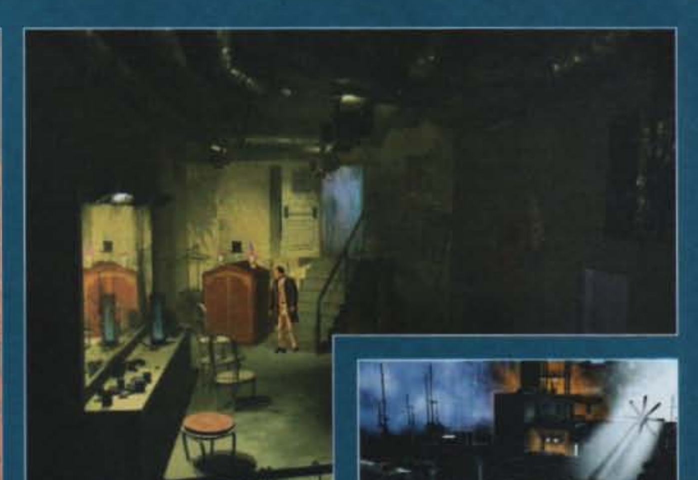
Of the 13 major characters under investigation by McCoy, five are Replicants, but the actual ones are randomly determined at the start of each game. It's up to the player to sift through the masses of clues, to figure out who must be 'retired' and who is human. As in the movie, there's even some doubt about McCoy's own origins. To help make the detection process as realistic as possible, Castle and Blank ensured that a number of key devices and scenes from the movie were slotted into the game, including the ESPER machine and the Voigt-Kampf test.

'The ESPER machine is my favourite part of the game. I can sit and play with this thing for hours, and just lose half a day,' Castle confesses. 'Because the scenes in the game are 3D, we can use them for the 3D photos and analyse them ▶





This scene from the game, in which McCoy visits police HQ, is perhaps closer to the film than any other. Every detail here – the TV on the filing cabinet, the blue light from the windows, the art deco lamp, the photograph on the desk – has been carefully rendered to leave the player in no doubt that he is, indeed, 'in' Ridley Scott's seminal movie



McCoy, the 'Blade Runner' in the game, visits another scene familiar to fans of the film – Abdul Ben-Hassan's Replicant snake store (left). Amazingly, each of these scenes is made up of between two and three million polygons

◄ with ESPER, and because each time you zoom in, the engine re-renders the scene to a higher resolution, there's virtually no end to the amount of detail and the number of clues that we can hide in one picture.'

It's an experience quite unlike anything else seen in a videogame. **Edge** could easily see how players could pore over one 'photo' for ages in search of clues, zooming in on ashtrays, wallets and other images, reading the covers of books that were only a speck on the original image to find a vital lead. Because these scenes are in 3D, it's then possible to rotate the camera within the picture, and, of course, each action is accompanied by bleeps and camera-shutter sounds included purely for atmopheric purposes.

> The fact that McCoy might be a 'skin job' creates some interesting dilemmas

Once clues are found, they're entered into KIA, a kind of digital assistant. It's no idle device, keeping track of which clues are connected to which suspects and which objects with which crimes. It's up to the player, of course, to put all the pieces of the puzzle together. The business of detection is only one facet of, what is, on all available evidence, an extremely complex game.

The suggestion that McCoy himself may be a 'skin job' throws up some interesting dilemmas. The player may, at one point, catch up with a young child he suspects of being a Replicant. There's no option but to shoot her. This isn't *Doom* – the kid looks up at the camera, pleading for her life, and it's up to McCoy to choose her fate. If he has discovered evidence to suggest that he himself is one of them, he may just decide to let her live and side with the Replicants against the police. If not, it's his duty to terminate her. Because the game is a realtime simulation, the AI can handle any number of plot twists, whether instigated by the player or by the game itself.

There's a good deal of interaction between McCoy and his targets, some of it not immediately obvious. As he interviews suspects or witnesses, word gets around – the characters all have their own AI scripts and motivations and talk to each other 'off camera'. The result is that McCoy could be either the hunter or the hunted, or both, at any time: although his job is to seek out non-humans, once the Replicants know they're being pursued, they may decide that attack is the best form of defence and begin following clues themselves, searching equally hard for him across a game world that encompasses some 140 different scenes, including many that fans of the movie will already be familiar with.

And in terms of the content of those scenes, *Blade Runner* has already succeeded, months before its release. From what **Edge** has seen of the game so far, Android Row, the noodle bar, Chew's laboratory and Zhora's nightclub have been perfectly realised and incorporated into a world so richly detailed and lovingly created that anyone with anything more than a passing interest in the movie will find it irresistible.

Fast-forward to December 1997. Martin Alper has just received the first batch of sales figures for Virgin/Westwood's latest title, *Blade Runner*. The game has sold more in the first month since its release than the original *Command & Conquer*. People who haven't purchased a game in years are buying it. Ridley Scott, who directed the movie, has publicly endorsed the product, and The Blade Runner Partnership hasn't stopped calling.

Alper leans back in his chair and breathes a sigh of relief. Westwood, he muses, is now the jewel in the Virgin crown. The phone rings. It's Louis Castle. 'Martin, you won't believe what we can do for the sequel...'





Not all the sets from the motion picture made it unaltered to the game. In the movie, the camera never gets a clear shot of Replicant Zhora's dressing room, so Powell had to rely on his own interpretation. Something shared between the film and the game is the futuristic-looking shower, created by visionary designer Syd Mead

analyses the implications for the future of videogames...Since the dawn of videog ... attempted to tap into the aesthetic and gameplay possibilities of the third dimension. But it's o

ce the dawn of videogaming, programmers have attempted to tap into the aesthetic and ga... possibilities of the third dimension. But it's only recently, with the advent of 32/64bit consoles and techn

TOWARDS

THE RISE OF

cently, with the advent of 32/64bit consoles and technological developments such as 3Dfx, that true 3D games have become a reality. Edge traces the rise of 3D gaming, looks at its problems and possibilit

al developments such as 3Dfx, that true 3D games have become a reality. Edge traces the rise of 3D gaming, looks at its problems and possibilities, and analyses the implications for the future of videogame

Since the dawn of videogaming, programmers have attempted to tap into the aesthetic and gameplay possibilities of the third dimension. But it's only recently, with the advent of 32/64bit consoles and technological developments such as 3Dfx, that true 3D games have become a reality. **Edge** traces the rise of 3D gaming, looks at its problems and possibilities, and analyses the implications for the future of videogames...

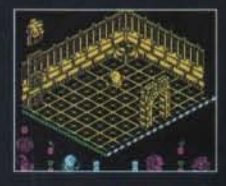
REALITY

3D GAMING

If there is such a thing as a videogames holy grail, it is not greater interactivity or improved design, despite what certain game-design gurus would have gamers believe. Instead, for better or worse, the perennial object of desire for developers and gamers is the creation of realistic 3D worlds. The crucial extra dimension is the key to a whole new breed of game.

Almost as soon as computer screens were capable of generating realtime images, coders were experimenting with crude ways of simulating three dimensions, be it a triangular set of blocks to imitate the perspective of a road stretching to the horizon, or spaceships composed of progressively large character squares to imitate 3D scaling. The arrival of vector-based displays in arcades at the dawn of the '80s added more fuel to the fire. The most memorable of the proto-3D titles which appeared around that time was *Battlezone*. With its wireframe tanks composed of little more than a dozen faces, it looks laughably crude now, but back then, the ability to move freely over flat terrain and battle it out with enemies which attacked from all points of the compass excited gamers, many of whom regarded *Battlezone* as more of a simulation than a regular coin-op. The vector graphics format was to provide the basis for several more successful 3D titles, including the seminal *Tempest* and *Star Wars* titles.





Both *Knight Lore* (top) and *Head Over Heels* employed an isometric 3D view – a popular choice in days of 8bit gaming

Even early home computers managed, with varying success, to provide the illusion of 3D. The ZX81, with a screen resolution lower than that of a single texture on the average 3D PC title, gave the gaming world *3D Monster Maze*, viewed by many retroheads as the true precursor to *Doom* (certainly, the in-your-face shock value provided by the sudden appearance of a monster is surprisingly comparable). Its creators, New Generation Software, went on to create several equally ambitious games for the Spectrum, including *Knot in 3D*, a landmark title blighted by the inability of most players to think in terms of three dimensions quite fast enough. Even a clutch of vector-emulating wireframe titles made it to the Spectrum, as well as the C64 and BBC Micro, with homages to the *Star Wars* arcade game proving particularly popular, along with simulation-cum-RPG-shoot 'em up *Elite*.

'Fake' 3D was the main currency in the early '80s, though, with many coders realising that by increasing the size and detail of a sprite, they could simulate movement in and out of the screen – the actual game mechanics and the calculations taking place in the background being as simple as ever. Forced isometric-viewpoint titles also flourished, spurred on initially by the success of arcade game *Zaxxon*, then Ultimate Play The Game's *Knight Lore* and Jon Ritman's much-loved *Head Over Heels*.

Programmers soon optimised their code in order to feature solid rather than wireframe polygon-based 3D in games, with flight simulations providing the most effective demonstration that this approach was more convincing. But it was the simultaneous arrival in 1992 of *Ultima Underworld* and *Wolfenstein 3D* for the PC that changed the face of 3D gaming. For the first time, texture mapping on polygons was integral to game design rather than being merely a gimmick, enabling both titles to depict indoor environments with a sense of depth that was wholly convincing. Origin's *Underworld* was actually the more visually rich of the two, using uneven rather than flat ground detail. But it was the shockingly simple but effective shoot 'em up format wrapped around id's first 3D engine that went on to spawn a whole new breed of 3D games and set the first of the company's benchmarks for other game designers. As **John Carmack**, author of *Wolfenstein*'s engine, says: 'It was the dawn of the 3D age.'

QUAKING ALL OVER

It was Softdisk's *Catacombs 3D* which gave Carmack his first opportunity to work with 3D. Although the techniques he learned on that game were applied to *Wolfenstein*, he decided to start again from scratch when it came to creating the legendary *Doom*. The much-lauded *Quake*, too, was the product of a completely new approach, each engine being tailored to the technology available at the time. 'I like to think that we've been good at providing the appropriate hardware for the appropriate times and finding the "sweet spots",' he attests.

In the case of *Doom*, Carmack's task was to create an engine capable of displaying indoor environments at unheard-of speeds. To achieve this end, he limited the display possibilities of the engine, using only vertically or horizontally aligned objects (so that pitching and rolling viewpoints were impossible) and ensuring that the





By limiting the possibilities of his *Doom* engine (above), Jon Carmack avoided the texture warping which afflicted other '3D' titles of the time, such as Bullfrog's *Magic Carpet* (left)





Wolfenstein **(left) introduced speedy, texture-mapped environments to the world.** ***Quake*** **(right) brought in true 3D, rich background detail and polygon-generated creatures, but relied on tight, indoor locations to keep the frame rate adequate**

Z coordinate on object faces remained constant, thus removing the need for time-consuming perspective correction. Compare the results with the 3D system on the PC version of *Magic Carpet*: although highly rated at the time, and powerful enough to support outdoor locations, Bullfrog's texture warping is unacceptable by today's standards.

'I don't know if I was quite aware of how much things would change,' admits Carmack, 'but 3D was always the goal – to build a virtual world. Previously, the technology just wasn't there to make it fast enough.'

A few select developers were given permission to license the *Doom* engine, while other software developers were faced with the gargantuan task of bettering Carmack's code. *Doom*'s 3D may only have been workable for one particular game style, but it raised expectations for all 3D-based titles. Carmack himself went back to the drawing board, and the result was an engine advanced enough to power *Quake*. 'There's not a line of code in *Quake* that's from anything that's gone before,' claims Carmack. 'We have all these other companies licensing from us, so all our technology gets reused and we don't have to do that.'



The fogging effect in ***Turok*** **enables the game to reduce the poly count by ignoring objects beyond the middle distance**

Carmack also credits the freedom to work on something until it is finished as one of the main reasons for his success. 'With *Doom* I tried three revisions, and with *Quake* there were at least eight attempts to do it. I'm not tied to the code I've written. I don't mind throwing it away and starting again. A lot of people couldn't do that. For me, a program is not going to be released until it's ready, but most companies just don't have that option.'

The result is that *Quake* struts its stuff in a very different way to *Doom*. It is optimised for interior locations, using a technique to Z-buffer on a scan-line basis rather than for the entire screen. With an ordinary Z-buffer, a 3D engine would have to interpolate Z coordinates for all the objects hidden behind walls, whereas *Quake*'s system can determine how much of each polygon is visible for every scan. It's a testament to Carmack's work that the new 3D card versions of *Quake* are not significantly faster than the standard software version.

'Some of the decisions it makes assume you're using large occluding polygons,' confirms Carmack. 'So there's never going to be an all-purpose engine. Our next-generation stuff is designed to do both indoors and outdoors, but there are still going to be trade-offs. Although each generation becomes more flexible, there's never going to be a truly "does everything for everyone" engine. And even if there was, it wouldn't be as efficient.'

OPTIMAL PRIME

So, while the 3D cheats used by programmers in the '80s are rarely seen these days, optimisation tricks have nevertheless become de rigeur for 3D programmers in the last few years. When trying to push a low-end PC or console to display panoramas in which hundreds of objects have to be displayed simultaneously, or shapes which are so complex that a couple of hundred polygons aren't enough, programmers have been forced to find shortcuts or alternative methods which limit the 3D rendering required.

For PC developers, there's the option of dropping perspective correction. Although this can produce the sort of warping seen in the aforementioned *Magic Carpet*, games which avoid placing polygons too close can take advantage of significant speed benefits. Sony's PlayStation has no perspective-correction abilities at all, so there's a constant battle to hide polygon warping. This is usually ▶

3D GAMING CLASSICS ①

Battlezone

Coin-op

The classic pioneer of the flat-playfield 3D environment, ***Battlezone*** **used a green-on-black vector-based display to portray the landscape and attacking tanks as simplistic wireframe models.** ***Battlezone*** **was probably the first title to suffer from the perennial 'attack from behind' problem that plagues so many 3D games.**



3D GAMING CLASSICS (2)

Zaxxon

Compared to *Battlezone*, *Zaxxon*'s visuals were positively lurid, with a full-colour, forced-isometric 3D landscape providing the backdrop to its *Scramble*-like gameplay. The ability to move up and down as well as left and right confused almost as many people as the sense of depth offered by the pseudo-3D. The isometric technique was later much used on the ZX Spectrum, notably with *Ant Attack*, *Knight Lore*, *Head Over Heels* and *Highway Encounter*.



◀ achieved by using a greater number of smaller textures, thus reducing the Z-coordinate differences which result in warping.

Fogging, where an object's textures take on the hue of the horizon as they recede from the player's viewpoint, is another technique used to minimise the polygon count in outdoor scenes – the most recent example being Iguana's otherwise spellbinding N64 game, *Turok*. The benefit of simplified models to depict objects when they recede into the distance shouldn't be underestimated, and nor should the use of lower-resolution textures. It does take some keen judgement to hide the transition to simpler models, however. Even recent flight simulations – Novalogic's *F22 Lightning*, for example – have utterly failed to hide the way that ground detail is reduced as altitude increases.

Several years before *F22*, Novalogic pretty much pioneered another method of generating outdoor landscapes quickly when it used voxel-based terrain to create the rocky landscapes in *Comanche*. Voxels are 'three-dimensional pixels' which allow shapes to be scaled and placed 'flat' on the screen – an approach which requires far less calculation than polygons. Infogrames has recently revived voxel landscapes for *No Respect* (see page 85), and earlier this year **Jon Ritman** at Cranberry Source used a voxel variant, dubbed the 'polar sprout', which enabled shoot 'em up *QAD* to manipulate hundreds of 3D objects at once. 'We won't be using the polar sprout techniques for the next games, though,' says Ritman. 'The speed gain is disappearing as powerful processors and 3D cards come in.'

Ritman also points to the limitations inherent in the voxel system. 'Voxels have their problems in their edging. When you get close to an object in *Doom*, the pixels are bigger but the edge is perfectly smooth, whereas with a voxel they blow up in the middle and on the edge as well, so they don't look as sharp. There's also the problems that voxels tend to eat up data space.'

The arrival of MMX was heralded as the solution to everybody's 3D problems, but it's now obvious that Intel's additions to the Pentium instruction set are difficult to get to grips with and are therefore not quite the panacea that was widely anticipated. 'Sell your shares while you can!' exclaims **Dave Perry** at Shiny Entertainment. He does, however, look more favourably on the MMX2 standard used in the new Pentium II series, which reduces the number of wait states to switch between MMX and floating-point modes from around 50 clock cycles to just one. It's still not possible to pair MMX instructions with floating-point operations, though, because of the shared-register set-up.

Consequently, few MMX-enhanced titles have appeared and, *Unreal* aside, few look set to arrive. Jon Ritman believes the industry's apparent lack of interest is due as much to lazy programming as anything else. 'Used correctly, you can really make things shift, for both 3D maths and manipulation of pixels. It makes it possible do things in parallel, if you're working in 16bit maths, which strikes me as pretty good.'

Ritman reckons that most code is switching over to floating point simply because it's faster on a standard Pentium, rather than for reasons of accuracy, and he therefore has no problems with the idea of using MMX-friendly 16bit, fixed-point (integers where several bits are used to denote fractions) maths instead. 'A floating multiply can be done in one cycle, whereas a fixed point (on a standard Pentium) takes ten or more cycles,' says Ritman. 'With an MMX chip, you can do four fixed-point multiplies per cycle. Of course, you may have to think – shock horror – about how to deal with the limitations of 16bit maths, but the gain is worth the work.'

However, John Carmack doesn't think MMX is particularly appropriate for 3D rendering. 'There are certain situations when it can be useful – we may use it in our next-generation engine for building some surfaces, for instance. But it's not very good for a general 3D system – certainly not for any of the *Quake* stuff.'

ACCELERATE TO ACCUMULATE

But it's the invasion of the new breed of 3D accelerators that is really transforming the 3D scene. Practically every 3D title now offers 3D card support in one way or another, and the number of titles which won't even work without a 3D card will soon begin to rise. A few 3D acceleration solutions existed a couple of years ago, but without a standard or much in the way of developer momentum, they didn't survive for long. It was the arrival of Microsoft's Direct3D which provided the catalyst needed to start the card invasion, a whole sea of card standards now swamping the market, each boasting supposedly coin-op-quality performance and offering calculation-intensive extras like filtering, translucency, Gouraud shading and MIP-mapping. Their manufacturers boast that this is the sort of stuff to transform PC graphics beyond recognition







Ocean/Infogrames' *No Respect* (centre) revives the voxel landscape style pioneered by NovaLogic with *Comanche 3* (left). *QAD* (right), from Cranberry Source, demonstrates the company's 'polar sprout' technology – a form of voxel-based sprite. VIS is also using the technique in *Earthworm Jim 3D*





***Forsaken* (left) shows off 3Dfx's impressive lighting effects and texture filtering, whereas Kalisto's *Ultimate Race* (right) reveals the fast fill-rate capabilities of the PowerVR Apocalypse3D card. Crucially, the latter now supports bilinear filtering**

and make programmers' lives far easier into the bargain.

The reality, of course, has been very different. A whole batch of S3Virge-based accelerators offer fairly unimpressive acceleration, the Matrox Millennium can't support 16bit textures or fogging, and practically every combined 2D/3D accelerator card fails to make the grade in both areas. The last six months have seen a clear leader in the field in the form of the 3Dfx Voodoo chip, used in the Diamond Monster 3D, the Orchid Righteous, and even several coin-ops (such as *San Francisco Rush* and *Mace: The Dark Age* from Atari). VideoLogic is doing its best to achieve similar levels of user and developer support and has now gained the backing of several important publishers, including Psygnosis, id and Eidos. But problems with early drivers, and the fact that the the original incarnation of the card lacked bilinear filtering – a technique used to smooth out pixellation in textures when viewed up close and prevent shimmering when viewed from afar – have given the 3Dfx Voodoo chipset a massive headstart.

In reality, each card has advantages and disadvantages. The original 3Dfx uses a cumbersome physical connection to overlay the PC's 2D and 3D displays, and can't handle resolutions beyond 800x600. It does, however, offer the best performance for the current crop of 3D titles, and includes as standard powerful and programmer-desirable functions such as chromakey and interpolated alpha blending, which VideoLogic's card lacks. The PowerVR, on the other hand, boasts a full 4Mb for texture memory, and features shadow support in hardware. The card's performance is also heavily related to the CPU, and so Videologic claims that it edges ahead of 3Dfx performance on machines with a clock speed of 200MHz or higher. There's also the superior fill rate to consider, which gives it the capability to generate speedy 3D even beyond 800x600, making it faster than 3Dfx for larger polygons (the potential stumbling block is that polygons will probably actually get smaller as coders take advantage of the extra power available).

'I'd say the Apocalypse criticisms were probably fair six or nine months ago, when we had our early drivers out,' concedes **Trevor Wing** at VideoLogic. 'I think now you'll find that developers will say it has improved dramatically. I accept that we were learning. I think that in the last six months we've closed that gap with 3Dfx.'

Wing is keen to stress that it's not a war, however. 'We feel that we have a chip as good as 3Dfx's every step of the way. But we're not fighting for a share – it's a huge market, and there's room for all of us. We want them to succeed too. I think in the longer term there is a battle to be fought, but in the next year or two it'll be about getting good 3D on every PC. It's for the benefit of the end user. We're all working on creating the market.'

Chris Kramer at 3Dfx also feels that the 3D card market has a fair way to go. 'To say that it's in its infancy would be an understatement, so there's a lot of room at this point. But I think the sheer presence of 3Dfx at E3 [see report, **E**48] shows how we feel the market is shaping up. We're still in the first generation of software, though. It's like when you look at the early PlayStation titles. In a year or two, things like *Tomb Raider* and GL *Quake* may well look really dated. I think the guys who are writing to our card are learning every day.'

'The 3Dfx Voodoo is by far the highest performer,' enthuses John Carmack. Of VideoLogic's card, he says: 'It's interesting because they picked an architecture different to what everybody else is doing. They've produced a GL driver, and it's not as fast as Voodoo, but I really was impressed. Right now, they are delivering performance that beats everything but 3Dfx. *Quake 2* will have OpenGL, plus drivers for 3Dfx and PowerVR.'

With gameplayers still adjusting to the idea of 3D accelerators, and both the major manufacturers planning yet more advanced cards for release by early next year, it looks as though the battle will go on for some time yet. Sources suggest that the polygon handling of VideoLogic's next card will be four or five times faster than its latest Apocalypse3D, and while Chris Kramer at 3Dfx is unwilling to comment on the much-awaited Voodoo Banshee chip, it is rumoured to boast similar performance improvements. Few disagree that the power offered will be astonishing.

In the meantime, both manufacturers now offer integrated 2D/3D solutions, in the form of Voodoo Rush and Apocalypse 5D. 'Currently, we're focusing on software – that's the driving force,' stresses Chris Kramer. 'Our message is that the Voodoo Graphics ▶

3D GAMING CLASSICS ③

3D Monster Maze

Sinclair ZX81

A landmark, not only because it used the 'monster in corridor' idea a decade before *Doom* arrived on the scene, but also because it manages to induce incredible sensations of fear and tension, with realtime animation based on nothing more than the block character graphics of Clive Sinclair's seminal 8bit computer.







The 3Dfx (top) and PowerVR chipsets have made custom visual effects and smooth frame rates a reality on the PC

3D GAMING CLASSICS ④
Knot in 3D
ZX Spectrum

***Knot in 3D* is probably the earliest example of a game which required the player to actually think and genuinely play using three dimensions. The 'light cycles without floors' idea of New Generation Software's long-forgotten classic still actually makes more use of its extra dimension than most modern 3D titles.**



◀ and Rush accelerators out there are the best option, and the reasoning is to show the amount of titles coming out. Just talking about the games due before the New Year, we're looking at over 100 titles that'll be accelerated in one form or another. We're talking about *Quake 2* and *Tomb Raider 2*, *Unreal* – too many games that are going to be popular this year will be accelerated for gamers to ignore.'

ACCESS ALL AREAS

Even with Microsoft's DirectX format to link all the PC acceleration options together, the situation remains less than straightforward. Programmers currently have the option of providing 3D card support by either writing directly to the cards – which requires a substantial time investment in learning the standard, or by going through DirectX's Direct3D API. That so many developers have gone for the former route says much about Microsoft's 'standard'.

'I think DirectX is very poorly designed, and I suspect it's a result of not having a good games coder on their team,' says Jon Ritman. 'There have been minor improvements, but it's still very slow. All the estimates suggest that if you use manufacturers' APIs instead you get about a 20% increase. I don't think that's acceptable. We've just put together an engine for our next game and at the moment it's running on accelerator cards via Direct3D, but if you run it in software it's about three frames a second.'

John Carmack is equally scathing about DirectX, having already published an open letter (together with several other developers) to Microsoft denouncing the format in favour of OpenGL (see separate box). 'We believe that you'll get better applications for OpenGL than Direct3D,' he says. 'The bottom line is that Microsoft wanted a proprietary API, but it's one that's getting in the way of the technical development. It's gotten a lot better, but it's still not as good or stable as OpenGL.'

David Weeks at Microsoft concedes that there have been stability problems, but counters that the format has had to do its growing up in public. 'Like any first run of a product, you have to listen, and we've hopefully taken that on board. If you look at a game, it takes 18 months to two years, and now that DirectX is reaching that point, it's getting to the stage where it's stable.'

'Overall, D3D has done its job,' opines **Dominic Mallinson**, development guru at Psygnosis. 'D3D has had its problems, many of which have been resolved – or are in the process of being resolved – and it is getting close to being a mature API. On the whole, proprietary APIs for doing card-specific versions have suffered from similar problems and so using proprietary APIs has not been the easier approach, with the odd notable exception. Driver instability has been widespread and seems to be independent of API. Once again, this is improving.'

'We're now seeing Direct3D-based titles like LucasArts' *Jedi Knight* and Rage Software's *Incoming* that are pretty incredible,' adds Chris Kramer at 3Dfx. 'Now that the initial grumbling is over, people are really figuring how to push it.'

Certainly, the arrival of DirectX 5, with its increased stability and new Direct3D immediate addressing mode, should put paid to many compatibility problems and programmer criticisms. It will come as standard as part of *Windows Memphis*, which is currently in beta test, and should be appearing in games over the next few months. There's even a feature to restore a previous DirectX setup, alleviating the problems that plagued many users of the original where games would often incorrectly overwrite an existing version of DirectX during the install. 'We've also done a lot of work with 3D graphics card manufacturers, inviting them to come in and test hardware to ensure compatibility,' reveals Microsoft's David Weeks. 'A lot of the problem has been Microsoft's fault for not informing developers how to program for DirectX, although it's also been down to programmers trying to take shortcuts.'

THE HOME SOLUTION

A 200MHz PC sporting a good 3D card may well put the current crop of consoles in the shade, but when Sony's PlayStation and the Sega Saturn were first aired, they in turn showed up the PC's limitations. With sub-£400 price points, no system-compatibility problems and built-in 3D support, these machines ushered in a new era of 3D far more accessible than the PC route.

Dominic Mallinson at Psygnosis agrees. '*Doom* was certainly an





Both LucasArts' *Jedi Knight* (above) and Rage's *Incoming* (left) show that D3D is finally becoming a viable 3D API





When Argonaut developed the Super FX chip, it gave Nintendo's SNES the power to handle 3D geometry and was used to great effect in *Star Fox* (left). The N64 version of the game (right) demonstrates the big technological shift over four years

important event, but it did follow from *Wolfenstein* and build upon its success. I would have to say that the PlayStation has been the single biggest "event" in 3D gaming because it was the first to bring it to the masses and is such a good design that it is still holding its own against newer technologies.'

The PlayStation may lack the floating-point abilities necessary to avoid texture warping (3D engines are forced to interpolate texture maps linearly and so get distorted results), but its translucency support and sheer speed have made it an ideal platform for 3D-enamoured programmers. The Saturn benefits from cleaner, non-warped 3D, but its programmers have rarely squeezed comparable performance from the machine. Yet **Harry Holmwood**, MD at Pure Entertainment, recently told **Edge**, 'As we've become more familiar with the way it works, we're now of the opinion that it is a better machine than the PlayStation.'

However, Holmwood highlights the problem that while the PlayStation has been expressly designed for 3D graphics, the Saturn is akin to a souped-up SNES and lacks the standard library routines necessary to get good results. Pure's forthcoming title *Lunatik* will only be able to offer lighting and transparency effects by addressing the DSP chip directly.

'I don't think there is a huge edge between any of the consoles in terms of their ability to create high-quality 3D games,' says **David Dienstbier**, producer of the *Turok* games at Iguana. All three consoles [Nintendo 64, PlayStation and Saturn] have a number of impressive 3D games that are actually very compatible with one another as far as how much geometry they are throwing around onscreen.'

Even the N64, with its huge array of 3D-specific effects, may not quite be the Silicon Graphics wonder machine its initial hype suggested, according to Dienstbier. 'Anti-aliasing, Z-buffering, bilinear and trilinear interpolation, MIP-mapping, etc, are all "free", but none of these features ensure that an N64 game will have an impressive 3D engine with a smooth, fast frame rate, or even high-quality graphics.'

'What you do notice when you look at something like *Mario* is that the landscape is composed of bloody big triangles – much bigger than you'd get on a PC game,' points out Jon Ritman. 'Saying that, it's certainly the best console, but I think there is going to be a major problem for developers over dual development in future. I can't imagine games we're putting together for the P200 PC with 32Mb of memory working on something like a PlayStation.'

In graphical terms, however, the Nintendo machine is already capable of competing with 3Dfx, although admittedly at a lower resolution. With Sega's next machine tipped to use some form of graphics processing capacity once native to the PC market, its problems may be at least partially alleviated. The cost of RAM has also dropped sufficiently for Sony's and Sega's next generation of consoles to compete with PCs in terms of memory, if not CPU power.

There's also the argument that the console market is still pushing back 3D boundaries faster than the PC. Certainly, there's been nothing on the PC to compare with the complexity of *Wave Race 64* or the 3D gameplay of *Mario 64*. And with the advent of Psygnosis' *Rascal* and a handful of other titles, programmers are finally figuring out how to use the PlayStation's hi-resolution ▶



The sequel to *Crash Bandicoot* should take PlayStation visuals into territory significantly beyond that of the original

3D GAMING
CLASSICS ⑤

Elite

BBC, C64 Spectrum, etc

The arcade was home to various 3D space shoot 'em ups, but it was Braben & Bell's wireframe-based home computer creation that gave rise to a whole new genre. With full 3D dogfighting action that was more advanced than even the flight simulations of the day, *Elite* finally gave gamers a taste of the freedom offered by movement through all axes.



3D GAMING CLASSICS ⑥

Wolfenstein

PC, SNES

Ultima Underworld **may have arrived at the same time and boasted more ambitious 3D world rendering, but it was John Carmack's engine for *Wolfenstein* that really changed the face of modern computer gaming. Using an engine optimised for flat, indoor locations, the game gave rise to a format that has now become the dominant 3D genre on the PC. And yet it's still something that id manages to do better than anyone else.**







The PlayStation's hi-res mode has long been considered too limiting, but SCEE has used it in *Rapid Racer* (left) without compromising on detail and frame rate. Iguana's *Quarterback Club '98* (right) is the first title to use the N64's hi-res mode

◀ mode without compromising too heavily on textures or frame rate. It's arguable that consoles are still making the running.

TRICKS OF THE TRADE

Hi-resolution console games are just the latest weapon in the 3D war, where despite the supposedly restrictive nature of console hardware and the arrival of PC accelerator cards, there is still a desire to create the latest and greatest 3D engine. The aforementioned *Rascal* not only generates convincing, almost warp-free scenes, but it also introduces tricks such as environment mapping (giving the impression that an object is reflective) to the PlayStation. Acclaim's Iguana team, meanwhile, is pulling off a hi-resolution trick on the N64, giving *NFL Quarterback Club '98* a clarity rarely seen beyond prerendered imagery. And then there's the current fad for over-the-top lighting effects, as exemplified by Psygnosis' spectacular *G-Police* and *Colony Wars* – the latter boasting an unprecedented amount of translucency, lens flaring and shading.

Core's *Tomb Raider* is less immediately spectacular but still impressive on all three formats (Saturn, PlayStation and PC). Indeed, although the PC version has become the 3D card manufacturer's favourite, it's a game with an engine efficient enough to run at speed in SVGA even on low-end Pentiums. Such is the attraction of Ms Croft and the sense of immersion offered by those expertly mapped-out environments that the technical considerations often go unnoticed.

Shiny's *MDK* is another game which excels in its field, affording views of extraordinary depth and including a zoomable sniper's viewpoint to make sure the gamer fully appreciates them. 'The *MDK* engine uses a lot of principles from "Game Development" versus "Text Book 3D",' says Shiny's Dave Perry. 'Many programmers follow the standard 3D books like parrots. These books tend to offer three choices: copy *Doom*; make a wireframe CAD package; plan NASA's mission to Neptune. Making games is about knowing what the player needs to see and feel, and more importantly, what they *don't* need to see and feel. We design our levels on this principle and design the game after we see what our engine is capable of doing well. Many teams stuff the game down the engine's throat and leave it coughing and spluttering. Simply put, if the game slows down, move objects or enemies around until it speeds back up. The gamer will thank you for the extra effort.'







G-Police **(left) and *Colony Wars* (centre) from Psygnosis are part of a new breed of PlayStation titles, pushing the translucency capabilities of the machine to the limit. Neon's *Tunnel B1* (right) was one of the first 3D PC titles to produce similar effects in software with no hardware acceleration**

THE SEARCH FOR A STANDARD

Despite numerous glitches, Microsoft's attempt to introduce a standard for 3D programmers and manufacturers initially seemed to have succeeded, at least until John Carmack and several others published an open letter to Microsoft complaining not only about the instability of the format but also about the whole way it handles and processes 3D data, pointing to the Softimage OpenGL standard as a superior 3D API.

'It inflicts great pain and suffering on the programmers using it, without returning any significant advantages,' argued Carmack. 'I don't think there is *any* market segment that D3D is appropriate for, whereas OpenGL seems to work just fine for everything from *Quake* to *Softimage*. There is no good technical reason for the existence of D3D. OpenGL is easy to use and fun to experiment with. D3D is not. You can make sample GL programs with a single page of code. I think D3D has managed to make the worst possible interface choice at every opportunity. Many things that are a single line of GL code require half a page of D3D code – to allocate a structure, set a size, fill something in, call a COM routine, then extract the result.

'All of the game-oriented PC 3D hardware basically came into existence in the last year. Because of the frantic nature of the PC world, we may be getting stuck with a first-guess API and driver model which isn't all that good. I'm sure D3D will suck less with each forthcoming version, but this is an opportunity to just bypass dragging the entire development community through the messy evolution of an ill-birthed API.'

OpenGL uses a procedural interface, which means that it processes data as it receives it, while Direct3D uses an execute buffer. A whole set of vertex data and commands are passed over, then processed in one big lump. Carmack again: 'On the surface, this appears to be an efficiency improvement for D3D, because it gets rid of a lot of procedure call overhead. In reality, though, it is a gigantic pain in the ass.' Having already abandoned a Direct3D-based implementation of *Quake*, id now hopes to avoid it altogether.

Aficionados of OpenGL also point to the program's other significant advantages, such as its more flexible colour handling, more advanced culling (which eliminates triangles of a particular orientation – those facing away from the viewer, for example), and a stencil buffer for masking.

'Internally at Psygnosis, we have watched this argument closely and discussed it at length,' says Dominic Mallinson. 'We would agree that Direct3D has been difficult to use and that OpenGL is a more intuitive API. However, our use of these APIs is simply to draw the polygons. It's a relatively straightforward part of the total engine process and once the initial learning curve with D3D has been overcome, it does a very capable job. It seems that the core argument between D3D and OGL is over extensions. OGL allows hardware vendors to add new features, whereas D3D requires Microsoft to add these features. The OGL approach is more flexible and can allow for new features to be exploited in games more quickly. However, it is arguable that it leads to instability and incompatibility. Within Psygnosis, we are using both OGL and D3D, with the current emphasis being on D3D. We do not see this as a major issue.'

'It's kind of interesting – you see points on both sides,' says Chris Kramer at 3Dfx. 'What Microsoft did was pretty clever, saying, "There needs to be a standard, here's what it's going to be." Now guys like Carmack are saying that you need GL support, that GL is better. I think Microsoft will be pretty receptive.'

David Weeks at Microsoft concedes that OpenGL is a very good standard. 'It's fully supported in *Windows* now. At the end of the day, I don't think there needs be a winner. It's simply down to developer choice.'

Quake remains the benchmark for many, though, with a wonderfully efficient 3D engine and a game design which, although familiar, makes full use of the opportunities a 3D world offers. It's this, just as much as the commercial considerations, that have led to so many rival developers embarking on *Quake*-style projects. Until *Mario 64* arrived, many argued that in terms of mainstream gaming (not counting flight simulators, in other words), id's titles were the only ones to make 3D gameplay workable and intuitive. Jon Ritman, for one, finds this situation worrying: 'It's strange that there are people out there designing games that they know won't be as good as what they are copying.'

Ritman believes that only a few developers have grasped the art of 3D game design, and he's not even totally convinced by *Mario 64*. 'There is no one I respect more than Shigeru Miyamoto, but in some ways I think he is better at 2D puzzles. I thought *Mario*, great though it was, relied far too much on the difficulties of the controls and getting the camera in the right position.'

'Everyone's games are looking far more pretty, but they don't demonstrate any real forward thinking or fresh ideas,' argues David Dienstbier at Iguana. 'The same problems exist that have always existed, and some new ones have become apparent.'

It's certainly possible to argue that advances in 3D hardware have made it easy to hide poor-quality design behind impressive visuals. Dave Perry: 'Bad games are bad games, bad programmers are bad programmers. And believe me, programming 3D cards is not a walk in the park – a lot of 2D programmers are history.'

Equally, it's hard to fault technology that makes 3D a less time-consuming process. 'There is no doubt that the 3D cards are freeing up more time for the programmers to improve other factors of the game,' says Psygnosis' Dominic Mallinson. 'Gameplay is all about design, and implementation of design is a compromise based around the technology and performance available and the time it takes for the programmer to implement it. 3D hardware definitely allows for more performance and more time for the programmers, but it still comes down to good design at the end of the day.'

THE FUTURE'S BRIGHT, AND EXPRESSED AS A FUNCTION

After the introduction of the DirectX 5 standard, the events set to shape the future of 3D graphics will no doubt be the next generation of 3D cards (the Voodoo Banshee and VideoLogic's next card) and the introduction of Intel's AGP standard. AGP should ▶

3D GAMING CLASSICS ⑦

Virtua Fighter

Coin-op, Saturn, etc

Along with *Daytona USA*, Sega's genre-defining beat 'em up turned the whole notion of polygon-based 3D around. The polygon count may seem laughable compared to the third title in the *Virtua* series and its various competitors, but just a few years ago the blend of motion-captured movements and all-too-solid combatants was revolutionary. Suddenly the idea of virtual actors didn't seem so outlandish after all...







Shiny's *MDK* (left) provided an impressive example of depth of field. The developer's next game, *Messiah* (above), will feature volumetric lighting and true-skinned models

3D GAMING CLASSICS ⑧

Quake

PC

Just as *Doom* improved the *Wolfenstein* engine tenfold, so *Quake*'s 3D system changed the face of firstperson shoot 'em ups yet again. As a oneplayer experience *Quake* is undoubtedly disappointing, but few can fault the coding that makes the beautifully realised environment and polygon-based monsters possible. It's a testament to the power of John Carmack's engine that many gamers prefer playing the original *Quake* to the recently released accelerator-friendly versions.



◀ ease the bottleneck between 3D accelerator cards and the CPU, something which Dominic Mallinson believes will offer huge benefits. 'AGP will allow us to use more texture detail and to modify textures in realtime. This will allow more realistic effects like flames and water, as well as allowing textures to be scuffed or dirtied in realtime. Another benefit we hope to see from AGP is an increase in the detail level of textures. At the moment, everyone thinks bilinear filtering is wonderful – it is – but better than blurring, the textures can just get more detailed as you get close to them.'

And just as rival developers are catching up with the level of technology demonstrated in the original *Quake*, so Carmack is set to push the standard forward yet again. This comes as a surprise to many, who expected *Quake 2* to be nothing more than a new array of levels and monsters. Instead, the 3D system has been substantially upgraded.

'It was never planned that way, but I've been devoting most of my time to *Quake 2*,' reveals Carmack. It includes most of the obvious things, such as translucency and interpolated frames on the model animation, as well as more detail. We've got environment mapping with the sky now, and the OpenGL version includes full three-channel lighting.'

Having ditched 'voxel sprouts' for the time being, Cranberry Source has been developing its own true 3D system. 'At the moment, it's up to the standard of *Quake*,' says Ritman, 'but we'll be improving it beyond that. We've already got effects such as coloured lighting. Obviously, the graphics system has to be top-notch, but I need a clever physics system that goes beyond the *Quake* engine. I need proper friction for surfaces, and the ability to accurately calculate objects hitting and bouncing off each other at funny angles.'

An engine just as proficient at dealing with real physics is something Brit developer Mirage has been working on for some time, the results of which will be apparent when it releases *Cowpokes* at the end of the year. Elsewhere, Shiny's *Messiah* has been embraced by many as the next step forward.

'It's about two years ahead of any other game development company's engine,' claims Dave Perry. 'We've shown realtime tessellation, with models of 120,000-180,000 polygons scaling in realtime. Someone's face can fill the screen in perfect detail, then go down to one pixel, super-smooth. It has realtime deformation – our characters have real skin and muscles that actually deform and stretch skin. It's truly eerie to look at. We also have cloth stretching, which I've yet to hear about, never mind see, in any other game. Realtime volumetric lighting means you can put just an arm in a beam of light and it alone will be lit, and we also have realtime interpolation. We don't sacrifice feel for graphics; we make the graphics work themselves to keep the feel and response.'

Perry also reckons that *Messiah* will run faster in software than with most 3D accelerators, but he also believes that 'the new cards that are coming out complement our technology and I think you will see *Messiah* being used as the yardstick by many of them.'

The tessellation techniques used by Perry certainly seem to solve many of the problems currently limiting 3D model detail. 'Basically, what we do now is let the software add extra polygon detail by equation,' he explains. 'This also stops the rotten old hardware stretching pixels that would look bad when close, and allows the game to control its own speed of execution. It also removes glitches and is a perfect solution for consoles. It will have to happen in all games in the future, but it's just a *bitch* to get working properly.'

Using maths-based functions rather than slow, memory-hungry data is definitely beginning to make an impact. Developer Innerloop, for example, is using its Iterated Functions Systems technology to generate landscapes that would otherwise require thousands of polygons, with the data stored as parameters and textures in mathematical form rather than 3D polygon models. 'Dynamically generated geometry is definitely the next step,' agrees John Carmack. 'The next thing I'm working on, everything's going to be working on, are images generated using curves and fractals.'

With 3D model data represented as mathematical expressions,

3D VISUALS EXPLAINED

While there's no single way in which to display realtime 3D, the most popular method at the moment involves the use of texture-mapped polygonal 3D to display hierarchically defined models composed of several polygons that share vertices. These polygons are the triangles and rectangles that join to depict the body of a racing car in Psygnosis' *Formula One*, a landscape in *Jetfighter III*, or a fighter's weapon in Namco's *Soul Edge* on the PlayStation.

The coordinates of each vertex on a single model are defined in 'model space' – its own 3D area with an origin relative to the model itself. Each model then also has a position in the engine's 'world space', as well as an orientation in three degrees (X, Y, and Z). The position is stored in matrix form, while its orientation is a vector, with the two combining to give an affine.

The first step in depicting the model onscreen is to use this affine to transform the 'model space' vertices into 'world space' ones. The object now exists in the actual game world. To actually draw the model, a further transformation is required, because the camera origin (ie the viewer's position) has its own position and orientation in the 'world space'. The inverse of the camera's affine in world space is what's used to transform each model's 'world space' vertices, creating a third set of values representing the object's position relative to the viewer.

This isn't the final step, however, for all the objects then need to be 'projected' onto the screen, which is best thought of as a flat plane between the viewer and all the objects. This is achieved by simply taking a line from each polygon vertex to the viewer. The point at which that line crosses the flat screen plane is where the pixel is drawn for that vertex. Each point on the polygon also has a coordinate which relates to its texture. Raycasting and/or interpolation are then used to obtain the texture information to fill the polygon. Raycasting involves dividing the triangle into horizontal (or vertical) scan lines, then drawing (or casting) a line from the origin through the pixel on the screen plane and onto the polygon in 3D camera space to obtain the texture coordinates. Such a process is time-consuming, however, so 3D systems usually only do as many raycasts per polygon as necessary and interpolate the rest of the data. On the PlayStation this raycasting isn't even possible, so all texture data has to be interpolated, producing results that are really only accurate when there's no difference in Z values between the coordinates.

This method makes it possible to render 3D models onscreen, but there's still the task of 'sorting' them in the right order. It is possible to use the 'painter's algorithm' (as used on the PlayStation), which simply involves painting the distant objects onto the screen first, but this results in inaccuracies where polygons overlap. Something called a 'spacial partitioning tree' can be used to sort the polygons within a model, making these glitches less likely, but the most effective way is using a full buffer, most commonly a Z-buffer. Because the sort is carried out using the inverse of the Z coordinates, it provides greater precision for nearer objects.

The screen
The lines cast from the model to the viewer intersect this plane at the point where the pixels need to be drawn

Lines from each vertex are cast to the origin (viewer's position) on the other side of the screen plane to determine how the object appears on the screen

Front elevation

The final screen image, with polygons further away in 'world space' appearing smaller

The camera space model, which is created by applying the model's world space affine to the model space values, then applying the inverse of the camera's world space position affine to that result

data can be tessellated in realtime, making the 3D engine faster and more memory efficient. The lack of standard, fixed-model data also has implications for animation. 'In *Quake* we used vertex interpolation, but Valve Software's *Half Life* uses skeletal modelling with the *Quake* engine,' says Carmack. 'It's definitely where the future is going. In the long term we'll be doing continuous skin and deforming the mesh rather than moving objects for animation.'

Carmack believes advances in 3D will have another side effect, putting a greater distance between the real innovators and the also-rans. 'It's taking much longer to develop each generation. *Wolfenstein*'s engine only took eight months, while *Quake*'s took 18. Even though there are a huge number of people, particularly in the demo scene, who can do something really impressive, the gap between demo and game is widening. The people who are the real competition are those who have great talent and great discipline.'

THREE IS THE MAGIC NUMBER

As id's designers put the finishing touches to *Quake 2*, Carmack is already hard at work on the 'Trinity' engine that will embrace these new techniques. 'We'll do another straightforward *Quake 2* ▶

3D GAMING CLASSICS ⑨

Tomb Raider

PC, PlayStation, Saturn

To be fair, Core's crowning glory does owe much to Delphine's *Fade to Black*, but *Tomb Raider* deserves its legendary status thanks to the combination of a 3D engine to rival that powering id's *Quake* and gameplay which simultaneously harks back to classic platformers and offers new levels of freedom. With outstanding creature modelling and a control system that makes light work of navigating through 3D worlds, *Tomb Raider* will no doubt spawn as many imitators as *Doom* and *Quake* before it.



3D GAMING CLASSICS ⑩

Super Mario 64

Nintendo 64

With its new console and 3D controller, Nintendo promised a breakthrough in gameplay, and with launch title *Super Mario 64* it more than delivered, taking 3D freedom even further than Core's *Tomb Raider* and capitalising on the control possibilities offered by that analogue joypad. The result is a game which not only looks more like a cartoon than anything before but also makes navigation through a 3D world something that doesn't require any previous knowledge of gaming whatsoever.





***Into the Shadows*, RIP, boasted great lighting**

◀ pack, and then start to make use of the next technology. The first game to use it will be fairly simple, then we'll follow that with something more substantial. More than ever, our strategy is to get something out that's leading edge, then do something better.'

Another alternative method for creating highly detailed 3D models can be seen in Westwood's *Blade Runner* (see p52). By using smaller, flat-coloured polygons rather than implying detail with textures, the developers are able to manipulate shapes of over 35,000-40,000 flat-coloured polygons in realtime. The use of non-textured, non-shaded faces may seem like a retrograde step, but with each poly rarely scaling more than a few pixels, the extra detail is arguably redundant. And no doubt it won't be long before textures are added using this method anyway, with those small polygons also making it possible to avoid perspective correction.

It's a broadly similar solution to that proposed by Metatools' 'trixel' Real Time Geometry system, which stores 3D models as points in space rather than predrawn grids, with the picture data embedded in the point descriptions rather than existing as a separate texture map. Which points need to be displayed, and how they connect, are calculated in realtime using algorithms based on 'Delauney' triangulation, again making it possible to dynamically alter the complexity of a model in realtime, with the algorithms placing more triangles in areas where smoother colour changes are necessary. Metatools claims that the RTG method is much faster than dealing with standard textured models on non-3D-accelerated machines, with handling speeds almost as fast as those associated with 2D graphics.

All these techniques mean faster, more complex 3D, which in turn is likely to give other effects a boost. 'I think atmospherics, like realistic fog, light dispersion and specular highlights are going to be big,' says John Carmack. 'There's a huge list of features still available that exist in 3D rendering packages but not in game 3D. I know certain people are saying that there's no more room for technology, but there's so much further that we have to go.'

'I think the problem is that we're on two opposing forces – the first is we want to increase frame rate and the other is to increase image quality,' says Trevor Wing at VideoLogic. 'The challenge is to do both at once. Adding things like bump mapping and isotropic filtering puts a huge hit on performance. You need massive fill rates to do that and keep performance up. The next stage is going to sort out the men from the boys.'

And all the while Microsoft will need to keep its DirectX format abreast of the changes if it's to remain a standard. Trevor Wing believes that DirectX 6 will include support for shadows as standard, for instance, while it's believed that version 7 will be a fully fledged implementation of the Talisman standard, which Microsoft set out as a future standard for 3D card manufacturers some time ago, and whose features will begin appearing on the next generation of 3D cards.



Metatools claims that its Real Time Geometry system offers a uniquely efficient method of 3D model manipulation

3D ACCELERATORS: THE BENEFITS

Ironically, 3D accelerators are best described as 2.5D cards, because they only use the Z coordinates of polygons for the sorting and perspective correction of textures. Other than that, they're actually working with 2D triangles, drawing them using the flat screen co-ordinates and 2D texture coordinates (although 3D textures are also possible). However, higher-end cards are able to handle the rotation calculations too.

The ability to use hardware to handle the time-consuming task of sorting does help 3D coders immensely, though. 3D cards provide the extra visual effects that are fast becoming a staple of the 3D scene. These include...

• Fogging – which involves applying a preset colour (typically the one at the horizon) to polygons, depending on distance.

• Gouraud shading – taking the RGB values for each corner of the polygon and interpolating across.

• Interpolated alpha – interpolating a translucent alpha value across a polygon in the same way as Gouraud shading.

• Chromakey – setting a colour to register as transparent, which is less time-consuming than treating it as an alpha.

• MIP-mapping – providing different details of texture map, to be used at different distances from the viewer's origin, each one prefiltered for the best results.

• Bilinear filtering – an anti-aliasing technique that mixes the values of pixels on a texture map to remove jagged edges in the foreground and shimmering in the background.

• Trilinear filtering – the same effect, but applied to two different MIP-maps, so the card can move smoothly between one MIP-map and another.

While Microsoft won't confirm or deny the existence of any developments for the next revision, it does concede that developers and card manufacturers will be the ones leading the way for the format. 'We've had to work closely with developers about DirectX, finding out what they need, how they can improve how they do things,' says Microsoft's David Weeks. 'They've been in the market longer than Microsoft. We have to learn and develop to integrate these technologies.'

'If you look at the hardware five years from now, it'll be doing 10 million polygons per second,' says John Carmack. 'With those numbers, triangle-based architecture looks like something that's not where things should go. You start looking at complex surfaces in hardware, and raytracing. The obvious thing is that we'll eventually be able to be do "Toy Story". And equally, we'll be able to do better games as that technology becomes available.'

Edge only hopes that such advances in 3D really are complemented by comparable leaps in gameplay. 

Multi-Racing Championship







The game's best feature is the way cars react realistically, depending on the surface being raced on – it's easy to lose control (above). Due to the small number of cars on the track, driving in *Multi-Racing Championship* can sometimes prove to be a lonely experience (right, top right)

The lack of racing titles on the Nintendo 64 has prevented the machine from competing successfully in what many regard as the benchmark console genre. However good *Mario Kart 64* is, it cannot be considered a realistic driving game, while *Cruis'n USA* and *Human Grand Prix* are hardly going to persuade PlayStation or Saturn owners to desert their machine and join Nintendo's ranks.

This situation is set to change, of course. Boss Game Studios' *Top Gear Rally* and Titus' *Lamborghini 64* are both on their way, and already on the starting grid, engine revving, is Ocean's *Multi-Racing Championship*.

As the name suggests, developer Imagineer has elected to present players with a range of road surfaces and a variety of different vehicles with which to tackle them, including sports cars, rally machines and 4x4 types. The game also offers the option of tinkering with the cars' settings, the balance of brakes, suspension stiffness, steering weight, tyre grip, gear ratio and aerodynamics all being changeable to suit individual needs. Any change in these variables is instantly noticeable, and a wrongly set-up vehicle is unlikely to finish first, at least not without some expert caressing of the analogue stick and no small amount of button control.



The customary chase cam and in-car views are offered (left and above). Signs warn players of upcoming splits in the road (inset)











Even on the same circuit, *Multi-Racing Championship*'s environments change considerably, as do the road conditions, which means that cars have to be correctly set up to have a fair chance

Initially, the game's three tracks may seem limited, but at various points in each one an alternative off-road route is offered, which may turn out to be a much-needed shortcut. Depending on the vehicle used, players can opt to take these shortcuts or to remain on the 'normal' circuit. The driver of a 4x4 vehicle, for example, may consider it wise to use as many alternative routes as possible, thereby reducing the tarmac sections to an absolute minimum.

As is common with this type of game, a certain degree of variety is offered by Championship, Time Trial and Free Run options, plus twoplayer and Match Race modes. In Championship mode, winning all three races allows players to compete against the first of the two secret cars in a Match Race. Once beaten, the 'Devil' car becomes available and can in turn be pitted against the game's second hidden adversary. Once the latter is also vanquished, players can race the circuits in mirror mode, thus effectively doubling the number of tracks available.



The twoplayer option works well, with little loss in speed. Each player's window is surprisingly small, however, obviously restricting the view somewhat

Arguably the most impressive aspect of *Multi-Racing Championship* is the handling of its cars, which, whether on tarmac, gravel, dirt or snow, grip the road or powerslide majestically around corners. Obviously, this depends to a certain extent on the car used – a crucial sense of realism is maintained at all times.

Graphically, too, Imagineer has done a commendable job, with well-detailed cars and plenty of pleasing scenery to distract drivers from the interminable series of bends and hills. Unfortunately, and significantly, the game is simply not fast enough to adequately convey the sensation of travelling at speed and is no match for, say, Namco's *Racer* PlayStation series.

Another problem is that it's possible to finish the game in a staggeringly short time. The extra competition offered by the twoplayer game does provide a certain amount of longevity, though, with little reduction in speed (although graphical detail is compromised and the playing window is severely reduced). The twoplayer mode also allows players to close off certain sections of the track in the interest of fair play, so that each circuit becomes a purely tarmac or off-road affair, with both participants following exactly the same route and giving up any advantages their chosen vehicle may provide.

While *Multi-Racing Championship* is a technically accomplished title, it stands as a slightly shallow racing game which is unlikely to attract speed freaks seeking a longterm challenge. E

Edge rating:

Seven out of ten



Effects such as headlights have been incorporated convincingly

EDGE			
	Format: **Nintendo 64**	Publisher: **Imagineer**	
	Developer: **In-house**	Price: **¥7,800 (£45)**	Release: **Out now (Japan)**

Last Bronx









***Last Bronx* runs at a fluid 60 frames per second which makes for exciting and fast, action-packed rounds. Expect Joe's nunchakus (above) to be replaced with a string of sausages when the game is released in the UK, though**

If there's one area that the Saturn has its competitors beaten in terms of consistent quality, it must be the ever-expanding beat 'em up arena. In their day, the 32bit incarnations of the *Virtua Fighter* series, *Fighting Vipers*, and *Fighters Megamix* certainly equalled – and in some cases bettered – anything seen on rival machines. It was therefore extremely unlikely that Sega would mess up this latest coin-op conversion.

Hardcore arcade goers will be aware that the *Last Bronx* coin-op has held a relatively low profile in the west since its release in 1996, proving less successful than it deserved to be. Although its graphics failed to break any ground, it nevertheless impressed fighting game fans with the speed and realism of the fighters' movements.

Thankfully for Saturn owners, while losing only slightly in visual terms, the console version of the game retains the gameplay and the aforementioned strengths of the coin-op, running in hi-res mode at a super-fluid 60 frames per second.

Several forms of play are offered, from Arcade, Time Attack and Survival options to the curious Watch mode, which pits two characters against each other for the player's viewing pleasure. A training mode also exists, much like that of *Fighters Megamix*.

The game's action takes place in 3D backgrounds representing famous Tokyo districts, and features eight variably skilled fighters. Special mention must go to the stage names in the Japanese version **Edge** reviewed: much amusement and a certain degree of anticipation ensued when preparing to fight in locales with denominations such as 'Naked Airport', 'Lust Subway', 'Dark Rooftop', and 'Radical Parking Lot'.

Each of the young fighters wields his or her own favourite weapon from a varied range including a sansetsu-pon (made up of three linked wooden pieces), sai swords, a battle stick, a huge wooden mallet, a bo sword and the kind of night sticks used by US police. For sheer visual grace, though, few characters come close to nunchaku-yielding Joe, whose masterful control of the two chained sticks is utterly realistic (although players should expect the weapon to be replaced by a more







The fighters go through the usual range of poses after a victory (above)





Some of the characters' moves are wonderfully violent (left), chiefly because they centre around the use of weapons, while others continue the beat 'em up tradition by remaining reassuringly exaggerated (right)







Last Bronx is an accomplished title that further reaffirms Sega's mastery at getting the best out of its 32bit system




The characters are just as deadly with their limbs, although moves are naturally centred around weapons

government-friendly example when the game eventually appears on UK territory).

Refreshingly, not only has each weapon obliged AM3 to program individual moves for every fighter, but uniform actions such as punches and kicks are also personalised, so that unlike other examples of the genre, every character possesses a unique catalogue of attacks.

Another welcome new addition to the genre is the way that drawn battles result in sudden-death rounds, the eventual winner being the first player to successfully land a blow.

And, like most other fighting games, moves can be linked together to achieve multi-hit combinations that hammer away at the opponent's health bar significantly. With a range of moves per character as staggering as those offered in *Virtua Fighter 2*, players will undoubtedly get to know the practice mode well.

As is always the case with this type of game, though, *Last Bronx* really comes into its own when a second joypad is plugged in. Fighting against CPU-controlled characters isn't a dull experience by any means, but it can't compete with the satisfaction of beating another player's character to a pulp, and many hours will be spent on the twoplayer option long after all the game's other modes are exhausted.

The only real criticism of Saturn *Last Bronx* would have to be that rounds tend to last a very short time – indeed, the default time setting is a mere 30 seconds, and most fights are over well within the time limit. This obviously dictates an action-packed experience but one that could prove too brief for players accustomed to the more generous limits offered by other games. There is little opportunity, for example, for players to assess their opponent and get a fighting chance if low on energy, within the space of a solitary round, as is possible with other titles.

But a quick visit to the option menu solves this problem, so it isn't a factor that detracts from *Last Bronx*'s standing as another enjoyable and quality-packed fighting product to emerge from Sega's remarkable game development stable.

Edge rating:

Eight out of ten




The level of character detail has been retained to a pleasing level, although shadows are disappointing

EDGE			
	Format: **Saturn**	Publisher: **Sega**	
	Developer: **AM3**	Price: **¥5,800 (£30)**	Release: **Out now (Japan)**

Dark Earth



***Dark Earth*'s graphics engine blends realtime characters and prerendered backgrounds – a technique most successfully used in Capcom's *Resident Evil*. The downside of such an approach is lack of gameplay empathy with the protagonist, although it does allow for some rather fantastic scenes (above)**





Many are well-realised (like these), yet some characters lack identity

If *Dark Earth* demonstrates anything, it's that content and not form can still provide the key to creating a successful PC title. Beautifully rendered though the game's 200-odd backdrops are, what works the real magic is the unfolding storyline and the sense of wonder that results as the player unravels the chain of events in the game and communicates with the myriad characters he encounters. The title may use the same format pioneered by Infogrames' *Alone in the Dark* games but it has little in common with that venerable yet frankly outdated series.

Dark Earth is essentially a medieval 'Mad Max', with a tale involving pockets of humanity struggling to survive in the few sun-blessed patches of land left in a world otherwise thrown into darkness by the after-effects of a nuclear war. As the game opens, hero Arkhan is a Guardian of Fire in the city of Sparta, with a secret love interest and daily duties to perform, but it's not long before a plot is set in motion that leads him into the surrounding darkness. Due to the ever-present threat of radioactive contamination, the fate of the protagonist as well as that of the city hangs in the balance.

Such an earnest story isn't an entirely enticing prospect, but Kalisto has worked hard with it, distracting from the essentially linear nature of the plot by giving the player significant freedom of manoeuvre in his immediate activities, with countless actions and combinations of actions catered for by means of preprogrammed responses and slightly varying events. The result is a game where conversations that aren't directly interactive somehow hold the attention, and where several hours' worth of such dialogue doesn't ever feel like hard going. It doesn't seem to matter that the story is actually travelling down preset pathways, because those pathways are always packed with incident and new twists.

That such an intricate story can be found in such a visually rich game is something of a surprise. In the past, similar games have tended to rely more on gimmicky camera angles than strong narrative, but *Dark Earth* works hard to make the display system as innocuous as



The fixed-viewpoint adventure has certainly come a long way since Infogrames' *Alone in the Dark*

possible, with an animation method that offers a greater degree of control from moment to moment, and ingame combat that doesn't rely solely on getting the angle of rotation and the timing of the first blow correct (a problem which blighted titles as recent as *Ecstatica 2*) but instead offers a range of moves more akin to a fair-quality beat 'em up.

Dark Earth also finally manages to make the combination of 3D polygon characters and prerendered backdrops a viable proposition. Characters composed of hundreds of polygons are light-sourced to match their position in a scene (the game supports both 256- and 32,000-colour modes), and even shadows are accurately cast onto the prerendered art. Glitches from previous games of this style remain, with annoying pauses between scenery changes and those awkward moments when a character stands on the edge between two scenes. But so involving is the story, and so glorious the views, that such aspects rarely frustrate.

Kalisto has sought to ease the player's progress in other ways. The inventory screen, for example, allows key shortcuts to be assigned to weapons for instant ingame access, and the choice of camera viewpoints produces a cinematic experience without ever leaving the player so disoriented that he doesn't know what's going on, or reduced to a speck in the distance when a battle is about to take place.

Another satisfying touch is the way Arkham can switch between 'light' and 'dark' modes (in a sense mirroring the state of the Earth itself). The former leans towards the hero's more human, rational side, while the latter taps into his dark, monstrous side. Once Arkham is contaminated, he is even able to pull off a special move during combat, although it accelerates his condition – a neat pay-off.

But the game is not without its faults. Although finely detailed, some characters look just a little too generic, requiring the player to engage them in conversation just to check who they are. And while the audio is professionally handled, the tendency towards stock American voices is faintly cheesy.

Dark Earth's biggest drawback, though, is that viewpoint. The scenes may be richly detailed and laced with incidental animation, but there is likely to be resistance to a title featuring a static perspective in these times of camera tracking and over-the-shoulder thirdperson viewpoints. Moreover, controlling the actions of a character from fixed remote viewpoints never feels as intuitive as a system where the player faces in the same direction as the onscreen protagonist.

Ultimately, though, what it really comes down to is personal taste and whether the potential purchaser won't even look at a game unless it's chock-full of cutting-edge 3D. Kalisto no doubt deliberated long and hard about which format to use, and the decision to go with the less flashy but more adventure-friendly option was probably wise. *Dark Earth* isn't the sort of title that needs to depend on such glossy tricks, after all – here, the story, and the player's progress through it, are paramount. And the fact that both elements are handled with such professionalism and inventiveness is more than enough reason to recommend it.

Edge rating:

Eight out of ten





One of the game's biggest achievements is its combat system, which allows for intuitive battles. An important factor considering the amount of enemies to be found within *Dark Earth*'s depths...





***Dark Earth* presents a game world reminiscent of the 'Mad Max' movie trilogy, with a (yes) dark colour scheme in general, and settings filled with a hotchpotch of grubby artifacts and sometimes even grubbier denizens...**

Format: **PC**	Publisher: **Mindscape**	
Developer: **Kalisto**	Price: **£40**	Release: **Out now**

Dark Rift



Dark Rift* fails even to make use of the graphical power laid out before it by the Nintendo 64. While it includes special move spot effects, they fail to reach the standards of those in *KI Gold



Understandably, grapple moves form part of each characters' repertoire

Even before its release, this game, Vic Tokai's first contribution for the N64, was besmirched by a rumour that Sony had already turned down the concept for the PlayStation. Completely unfounded, of course, but *Dark Rift* does pitifully little to deny that it could have worked just as well – if not better – on 32bit.

Essentially, this is the latest title to claim its sardine-tight allocation in the hall of *Soul Edge* derivatives, although it's too poor a facsimile to be labelled a clone. Control is via D-pad, failing to exploit the N64's analogue potential, with shoulder-button sidesteps disguising the true side-on nature of the system. The combat engine revolves around *Soul Edge*-style chain combos, some of which expand into tenstrings: there's little freedom beyond the predefined routines. The problem is that, having played *Dark Rift*'s superior contemporaries, the familiarity merely highlights what's missing. There are no reversals, counters, or guard impact tactics; throws are button-cheap; the moves are almost identical for each character; and the weaponplay is unexplored to a degree where blade swipes might as well be punches and kicks. Worse, *Dark Rift* possesses no unique features or original playing twists to replace what's conspicuously absent.

Ironically, the game's title seems regrettably appropriate, in the sense that only manual adjustments to brightness and contrast allow players to make out what's happening against the unilluminated gloom of the unambitious 2D stage backdrops. Light-sourcing, authentic shadows and retina-burn trail FX are all present, but in such token measures that it's often not even noticeable. Nevertheless, rare moments of camera panning and one or two reasonable character designs (Aaron's SWAT-style kevlar gear, for instance) hint at what might have been achieved in 64bit.

In the long term, it's not just the shortage of characters and the shallowness of the game engine that disappoint. The complete lack of invention, of flamboyant creativity, fails to produce a single surprise or elicit one impressive moment of action. Even with two human adversaries reasonably versed in its basic tactics, there's simply no joy in going through *Dark Rift*'s motions.

This isn't the first time that Kronos, the game's American developer, has failed to capture the imagination of the gaming fraternity's beat 'em up devotees. One only has to consider its previous efforts – the much-derided *Eternal Champions* on the Mega Drive, or the insubstantial *Criticom* on 32bit formats – to appreciate its perseverance in the field, despite consistently substandard results. *Dark Rift* is its most competent offering to date, but it would still take a brave publisher to commission a fourth, as this is about as average as 3D fighting games get.

Edge rating:

Five out of ten





***Dark Rift*'s biggest failure is that it does not bring anything new to what is an oversubscribed genre; it is among the most evolutionary, rather than revolutionary, titles around, as the character Morphix (left) demonstrates**

Format: **Nintendo 64**	Publisher: **Vic Tokai**	
Developer: **Kronos**	Price: **$70 (£40)**	Release: **Out now (US)**

Street Fighter EX Plus **Alpha**



The new characters' weapons are great, although *Mortal Kombat* fans will have seen this one before

Despite its polygon splendour, *Street Fighter EX* received a laconic arcade reception from a public grown accustomed to seeing Capcom's fighter in all of its 2D glory – the perfect combination of great sprites, super-fluid animation and boundless playability. Arcade beat 'em up fans were not drawn away from their *Tekken*s and *Virtua Fighter*s which added the (limited) benefit of 3D gameplay to accomplished visuals.

However, *Street Fighter EX Plus Alpha* is more than merely a straight conversion of its coin-op parent, and features a multitude of console-only extras. Beyond the practice level, players can tackle arcade, time attack, and survival options, while versus and team battle modes are offered for multiplayer matches.

The game offers 23 characters, some of which becoming accessible only after much CPU-defeating. Veteran fighters such as Ryu, Ken, and Guile mix comfortably with a new batch of hopefuls, and the characters' diversity is such that the game's lastability is firmly assured.

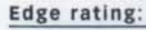
Visually, the game is sumptuous, with crisp, fluidly animated characters (at 60fps) and splendid special move effects. The backgrounds, too, although 2D, are up to Capcom's usual high standard, and dynamic weather effects such as rain and snow are welcomed additions.

SFEX Plus Alpha's other strength, as with all other *SF* titles, is the immediacy of the 2D gameplay to those familiar with the previous games. The characters' standard moves remain the same, with the usual combination of attacks and counter attacks possible, but a substantial range of additions to their repertoire is also included.

However, this polygon realisation still does not play quite as swiftly as its bitmap precursors. Prolonged play does dilute this hindrance, as players get used to the change of pace, but this is yet another indication of how 2D will remain the choice for beat 'em up purists.

Nevertheless, this latest instalment is yet another worthwhile addition to the *Street Fighter* series, and it will no doubt be snapped up by PlayStation fighting fans during the wait for Namco's *Tekken 3*.

Edge rating:



Eight out of ten







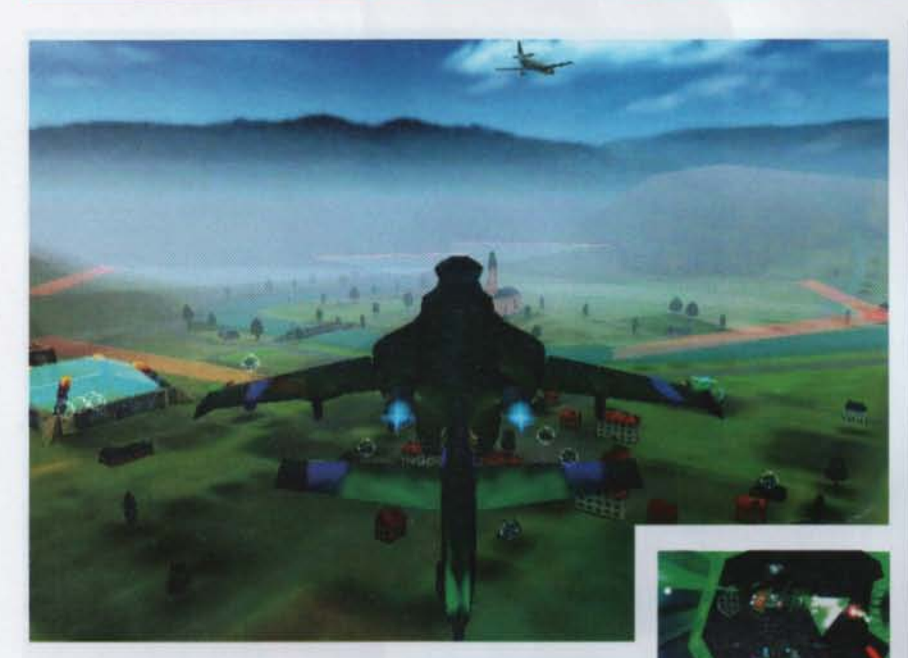
The game adopts the previously used power gauge which builds up as players use their characters' special moves, resulting in devastating attacks



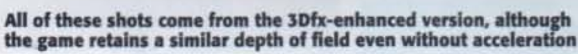
UK fighting fans will have to wait until November for the PAL version from Virgin

Format: **PlayStation**	Publisher: **Capcom**	
Developer: **Arika**	Price: **¥5,800 (£30)**	Release: **Out now (Japan)**

Extreme Assault







All of these shots come from the 3Dfx-enhanced version, although the game retains a similar depth of field even without acceleration



In the field of PC software development, there's a tendency to bolt a simple arcade-style format onto an impressive 3D engine in the hope that the technology will carry the gameplay. But while *Extreme Assault* sports that potentially uneasy mix of no-nonsense shoot 'em up action and cutting-edge visuals, it's a formula that instantly impresses, thanks no doubt to a design that squeezes every last bit of mileage from the helicopter genre, not to mention a relentless pace.

There are obvious parallels between *Extreme Assault* and Core Design's *Thunderhawk 2*: both offer low-level helicopter combat in the coin-op mould – but *Extreme Assault* is a far more robust experience, proving challenging even with a highly simplified flight and vehicle control model. It also goes all out to alleviate restart-point frustrations and mid-mission boredom by sectioning its linear yet lengthy story into tiny sections, some of which take as little as half a minute to complete (although most last ten times as long). Complete the mission objective and the press of a function key activates the next mission; die and that particular segment must be replayed – it's as simple and hassle-free as that.

The actual challenge comes from combat rather than the flying itself – the key to success is precision aiming and the ability to strafe either horizontally or vertically to avoid enemy fire. So hardly a rival for the MicroProse school of sim, then. However, this less-than-authentic approach fits in well with a story that wastes little time in ditching wargame authenticity in order to confront the player with an alien force. Improbably, the game takes the helicopter underground and even switches to a tank before emerging into the skies again. The narrative makes it possible to effect several graphically different location changes, and also to insert plenty of unique mission objectives among the usual challenges of finding an exit or destroying an enemy lair – unless multiplayer mode is chosen, of course, in which case the game reverts to a plot-free, but most satisfying, deathmatch format, with control of either 'copter or tank.

As enjoyable as the pulp-ish gameplay is, it's the superior game design and supreme 3D system which provide the main attraction. 3Dfx support is, of course, now practically standard on such titles, and with this extra power the game positively shines. But the real surprise comes when it is run on a regular, non-accelerated Pentium machine. Even with the highest resolution selected, *Extreme Assault* maintains frame rates higher than most 3D-based PC titles. Add to that an excellent depth of field, with fogging that's more of a graphical nicety than a polygon-culling trick, plus a range of impressive translucency effects – including lens flaring, glass textures, searchlights and some superb explosions – and it's clear that Blue Byte is quietly setting a new standard here.

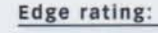
Although graphically *Extreme Assault* is difficult to fault, it must be judged on its gameplay merits, and while it looks the part of a real cutting-edge app, the actual game never quite manages to dazzle at quite the same level – it's enjoyable but hardly revolutionary. Still, when was it ever a crime to present a solid, well-honed shoot 'em up as spectacularly as possible? E





Tank-based levels within closed-in areas (above) offer a welcome change to the Sioux-based blasting

Edge rating:



Seven out of ten

Format: **PC**	Publisher: **Blue Byte**	
Developer: **Blue Byte**	Price: **£30**	Release: **Out now**

No **Respect**

For PC gamers, 1997 looks like being remembered as the year 3D accelerator technology made it big. This makes *No Respect*, from Belgium developer Appeal, seem more than a little perverse. Ocean's latest convert makes the courageous decision to pit voxel graphics against the Direct3D-accelerated appearance of many of its rivals. Unfortunately, while its voxels prove reasonably swift, *No Respect* ultimately vindicates the rise of the polygon engine/3D card alliance.

In essence, *No Respect* is *Battlezone* for the '90s, with hover vehicles in place of tanks and knobbly 3D voxel arenas instead of glassy smooth moonscapes. Each level is a dual to the death, fought according to a best-of-three-wins rule.

Despite initial appearances, since the height of the player's hovercraft is controlled automatically, this is little more of a true 3D experience than *Battlezone*. The arenas' many nooks and crannies make good hideaways, which obviously adds to the complexity of the gameplay, although the hovercrafts' sophisticated targeting systems limit the potential for stealthy play.

Claustrophobic arenas make for tight gaming, but instantly reveal the limitations of the graphics engine. The 'indoors-in-the-outdoors' approach limits the amount of horizon drawn, which is a shame, since the distant grey hills are rendered quite convincingly. Up close, things are altogether murkier. It's not that the muddy grey walls are ugly – they represent a clever palette choice and make fogging barely noticeable – but they hardly set the pulse racing. In contrast, *Extreme Assault*, *Comanche 3* or even Ocean's own *Tunnel B1* have all shown what an unaccellerated PC can do in the fancy graphics stakes. Questionable lighting effects, such as shadows which creep up hillsides as you fly towards them, further the impression that *No Respect* belongs to an earlier age of graphical trickery.

If Appeal's graphics engine proves flawed, the company should perhaps consider a move into the HUD design business, because game data in *No Respect* is perfectly delivered. Noting enemies' health levels soon becomes second nature, as you time your rushed attack. But duels in *No Respect* too often degenerate into toe-to-toe blast-outs. It's the game's loss, since sneaking around for extra ammo then hunting after a weakened enemy make for by far the game's best moments.

Perhaps it's a measure of the simple gameplay, but the tactics of opponents don't alter much as progression is made. Moving up to level seven, for example, sees nothing new apart from the enemies being a better shot. Worse, although flying against a human adds its usual frisson, it doesn't affect gameplay strategy much at all.

It's hard not to be disappointed by *No Respect*, especially since **Edge** was won over by its visit to Appeal (**E**44). It's no more than an average console-style blaster. With its hovercraft evoking *Wipeout 2097*-style prospects, the decision to create an engine that's not capable of supporting Direct3D seems all the more misguided. Hopefully Appeal's next voxel engine (to be seen in *Outcast*) will deliver a more convincing experience.



***No Respect*'s voxel-based graphics engine deserves praise simply because it refuses to pander to the current PC climate. Ironically, however, this is likely to repel rather that attract gamers**

Edge rating:

Six out of ten







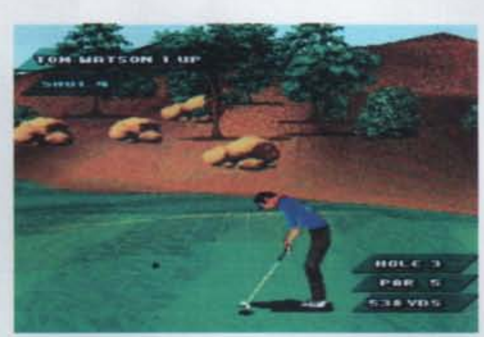
There are various different hovercrafts, each with its own type of weaponry, and the player can use any of them

Format: **PC**	Publisher: **Ocean**	
Developer: **Appeal**	Price: **£30**	Release: **Out now**

Actua Golf 2



Gremlin has beefed up *Actua Golf 2*'s graphical content, including player animation, by no small margin, but the general controls remain familiar to so many golf games that have gone before it





Few companies are producing PlayStation sports titles with the same frenzied dedication as Gremlin. The ever-increasing *Actua* range is the dominant sports brand on Sony's machine, and *Actua Golf 2* is an obvious attempt to consolidate that position, upgrading last year's original (which had a lukewarm reception) with improved visuals and commentary.

Initially, it's the 3D environment that impresses. Long gone are the days of flat graphical wallpaper in a golf game, and *Actua Golf 2* offers a fully textured 3D world that is much sharper and smoother than its predecessors'. If one of the joys of real golf is strolling through the countryside, *Actua* does its best to recreate that feeling in the player's living room.

But it's the commentary that provides the real 'wow' factor. Golf stalwarts Peter Alliss and Alex Hay supply the voices, contributing 40,000 soundbites between them, but rather than their sheer quantity, it's the way they're used that impresses – there has never been a smoother, more realistic commentary in a videogame. While the sedate pace of golf admittedly gives the software plenty of time to choose an appropriate reaction, it's to Gremlin's credit that it has used the opportunity so well. Alliss and Hay never put a foot wrong, and every comment is appropriate – often not just to the shot played but also to the position from which it was played. In a bunker, therefore, players should expect a dry joke about sand from Allis.

Even more impressive is the way the commentary is used to inform as well as entertain. Choose one of the new types of shot, for instance, and a voice describes how and when that kind of shot should be played, as if it were informing a television audience.

So, given the extraordinary slickness of its presentation, it comes as a disappointment to discover that underneath, *Actua Golf 2* is similar to every other golf game ever made (and there are many). The familiarity of the standard power-bar arrangement, which the player uses to determine the power and accuracy of his shot, develops into pure déjà vu as the six courses are played through. *Actua Golf 2* has the same basic gameplay as all of its rivals, so players with significant experience of other golf games will see themselves at pro-status in no time.

The upshot is that *Actua Golf 2* is a first-class audiovisual experience, but an ultimately disappointing game, even considering its obviously worthwhile multiplayer option. It's difficult to see how the golf-sim genre can be really expanded upon, a consideration Gremlin itself appears to be all too aware of...

Edge rating:

Seven out of ten





The game's camera views are especially impressive (above), giving an experience somewhat akin to that of television coverage



Detail level is but one of the features expanded in this sequel, including surface-specific nuances

Format: **Playstation**	Publisher: **Gremlin**	
Developer: **In-house**	Price: **£45**	Release: **Out now**

Battle Arena **Toshinden** 3







The game scores a great deal in presenting elements never before seen in titles of its ilk – witness Vermillion pulling a firearm on his opponent (left). Unfair? Certainly. Entertaining? Absolutely

For many import gamers, recalling their first sight of *Toshinden* is an act verging on nostalgia. It was an early graphical showcase, those see-thru slips worn by Ellis saying more about the possibilities of polygons and translucency effects than any number of press releases and tech spec bumf. Playability seemed less important than accessibility and, even at the time, any self-respecting *SFII* fan could recognise the lack of depth. But Sony's console was new, competition was non-existent and *Toshinden* sold remarkably well.

Hindsight has proved less generous than the reviews of the time. Tamsoft's latest instalment won't escape the derision of diehard fighting fans, but there's a joyous sense of 'one last fling' in its carefree excesses.

Realising that *Toshinden*'s whips, clubs and daggers would no longer stand out in these post-*Soul Edge* times, Tamsoft has upped the ante dramatically. *BAT3*'s outrageous selection of implements from Death's toolbox now embraces blowpipes, chainsaws, bombs, cannons and even automatic pistols. After a gruelling swordfight, it's agreeably anarchic to pull a revolver on an opponent and drop them without a thought for honourable conduct.

Even the character designs sometimes impress, veering away from past stereotypes with style – spot Vermilion's 'Travis Bickle' sleeved firearm – and a welcome dose of humour, as evidenced by a dubious moonwalking Michael Jackson parody who delivers his post-match jibes in an appropriately squeaky voice.

As for new twists and modifications, well, the Practice Mode (US version) reveals an assortment of energy bars, super gauges, ammo counters and pad read-outs which obscure almost half the screen. Enclosing the arenas has introduced the possibility of 'slamming' opponents against walls or ceiling, increasing hits and juggle potential but allowing victims to reverse the move in a 'rebound' for an off-wall dive. But perhaps the most unusual feature is the ability to switch between 30fps and 60fps running speed, sacrificing some of the stage and character detail for faster, chunkier fighters with minimal texture-mapping and slicker animation.

So it's something of a shame that so much effort has gone into producing the finest *Toshinden* to date without actually addressing the problems that undermine its longterm challenge. Once again, victory is assured by blocking and side-rolling until the time is right to unleash whatever super-special move comes easiest. Some of the 32 fighters are hopelessly outclassed by others, and it's clear that the emphasis remains on scrubby pyrotechnics and link-anything combos rather than balance or finesse. Adding new moves and characters hasn't made the system any more complex or demanding, although it's rather more fun than some hardcore retentives would claim.

Toshinden 3 is subtitled 'The Final Battle'. Is it safe to assume it will be?

Edge rating:

Six out of ten



One of the game's cleverest features is its speed/detail option, allowing battles to be conducted at 60fps with rather crude detail (main) or 30fps with rather more elegant visual flair (inset)

Format: **PlayStation**	Publisher: **SCEE**	
Developer: **Tamsoft/Takara**	Price: **£40**	Release: **Out now**

Salamander 2









Some of the enemy sprites in *Salamander 2* are huge and occupy most of the screen. The end-of-level bosses (left) are now particularly impressive



***Salamander 2*'s impressive parallax scrolling and colourful environment give it a convincing sense of depth**



The original *Salamander*'s graphics remain atmospherically alien today

S*alamander 2* is the third title in a collection from Konami which also features the game's two previous incarnations, the popular coin-ops *Salamander* and *Life Force*, dating from 1986 and 1987 respectively. However, the latest version in the *Salamander* series is in fact a console-specific title which has never shared the bleep-sodden atmosphere of an arcade with its namesakes.

In this horizontal and vertical shoot 'em up (every other level is presented in a top-down format), two players can join forces to take on the enemy waves, or a single player can tackle them alone.

The graphics are certainly colourful and show what technological leaps have been made over the last few years, with lavish detail standing in stark contrast to the visual barrenness of the other two games on the disc.

Enemy sprites rotate impressively, the weapon upgrades are meatier and have more visual impact, and certain levels boast highly detailed backgrounds with many layers of parallax scrolling.

The first thing evident in playing *Salamander* is how ridiculously difficult it is – something it shares with its arcade antecedents. There's no gradual learning curve here – within seconds of playing, the screen is littered with bundles of sprites, most of them being, rather unfortunately for the player, enemy bullets. Play therefore tends to take the form of a series of drastic evading manoeuvres, something the Saturn's joypad isn't particularly well adapted to – for a game of this type, a joystick is usually preferable.

Unlike its predecessors, *Salamander* offers players the ability to continue their game after they've run out of lives. However, in time-honoured fashion, the programmers have inexplicably decided to sacrifice any chance of longevity by providing infinite continues. Because the continues allow the action to carry on from where the last ship met its demise rather than sending the player back to the beginning of the level, even someone with the most grievous lack of hand-to-eye co-ordination will be humming along to the end credits tune within a mere ten to 15 minutes of loading the disc.

The game then loops back to the start, allowing players to tackle the same six levels without the reassuring assistance of continues and thereby transforming *Salamander* from an easy and disappointingly short affair into a fiendishly difficult one. Either way, this is a game which fails to offer the finely tuned balance between success and failure on which the gaming experience depends.

The two coin-op titles in the package, which are both emulated excellently (unsurprising given the ease with which the Saturn deals with bitmap images), do provide a long-term challenge, but their difficulty is such that all except the best – and most nostalgic – shoot 'em up fans will find them severely frustrating. Despite this, however, their inclusion serves a valuable purpose in lifting the package out of average-status territory.

Edge rating:

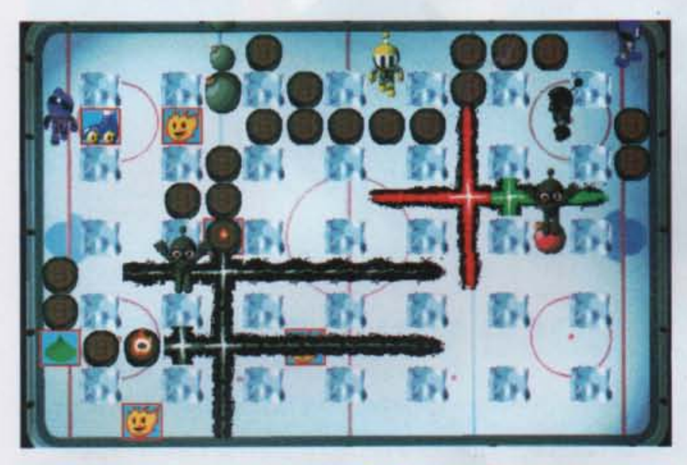
Six out of ten



Every other level is a difficult, vertically scrolling affair (above)

Format: **Saturn**	Publisher: **Konami**	
Developer: **TrueMotion**	Price: **¥5,800 (£30)**	Release: **Out now (Japan)**

Atomic Bomberman





This PC version somehow loses the graphical charm of 16bit console examples, with over-detailed sprites. It's still a very fine game, however

Given that converting HudsonSoft's classic multiplayer strategy game is the software equivalent of remaking 'Citizen Kane', Kinesoft has done a pretty good job of translating that legendary gameplay to the PC.

The action is set in a onescreen arena, where players plant bombs in order to blow up the other participants. Along the way, they can pick up power-ups which enable them to increase bomb strength, pick up and throw bombs, and set timed explosions. Its a frantic and addictive but blissfully uncomplicated experience which can turn close friends into enemies within 20 minutes.

As well as aping *Bomberman*'s classic gameplay attributes, Kinesoft has added a few of its own features – a factor which will no doubt enrage purists who believe that only Hudson can improve on perfection. There are, for example, dozens of different death animations and wisecracking samples to accompany the action, which are funny for a couple of minutes but soon grate.

There are other problems. PCs have a tendency to stall the action occasionally, which is confusing and infuriating, and the visuals have lost their Japanese cuteness and simplicity. This conversion is, however, not the disaster it easily could have been, and the LAN option is the pièce de résistance. SNES veterans, stay away; PC owners, welcome to gaming heaven.

Edge rating:

Seven out of ten

Format: **PC**	
Publisher: **Interplay**	Developer: **Kinesoft**
Price: **£35**	Release: **Out now**

Gun-toting thugs, martial arts teams and armadillos: the coin-op scene doesn't get much more diverse...

Armadillo Racing





It's great to see a major manufacturer such as Namco attempting something original – although this is still, of course, a head-to-head racing game



Judging by the other animals in the game, Namco may have found inspiration for a sequel

Armadillo Racing was the only new title presented by Namco at the AOU show in February, and caused a stir because of its stark contrast with the company's other racing games.

Up to four cabinets can be linked as players race armour-plated creatures using a trackball control system, which allows 180 degrees of movement in order to negotiate the variously taxing turns.

The game takes place in a South American forest, where two courses – a sprint and obstacle race – see features such as rivers representing just one variety of the game's many original hazards.

Armadillo Racing's colourful graphics, extremely fluid animation and great multiplayer action certainly make it stand out, although it's the central premise that will probably turn most heads.

Developer	Namco
Release	Out now (Jap)
Origin	Japan









In order to make things harder, the courses will throw all sorts of obstacles in the armadillos' path in an attempt to slow them down



The game's trackball controller is surprisingly intuitive, allowing players to easily steer their armadillos as they challenge the rest of the field

Total Vice





The game's adversaries will feature some ridiculously powerful artillery (above)

Developer	Konami
Release	TBA
Origin	Japan

This latest lightgun shoot 'em up from Konami is a violent and bloody affair, with the player helping the American government get rid of social undesirables from the game's three action-packed stages.

The first level takes place in a Harlem shopping centre where players will have to deal with violent gang members, while the second sees players neutralising a terrorist siege of a downtown building, and the final level takes place in the city's port, with arms dealers waiting to be taken care of.

With all three stages featuring an obligatory end-of-level boss, players can rejoice in shooting a varied assortment of criminal masterminds, including a gang leader, a former spy, and a drug dealer.

In gameplay terms, *Total Vice* is a classically styled shooting game, and reminiscent of Konami's previous effort, *Thunder Hurricane*. Indeed, like the latter, this latest offering will use prerendered polygonal scenes, resulting in fast and furious action.

Two players can join forces and take on the American criminal underworld in this polished lightgun shooter which, unlike recent examples of the genre such as Sega's *House of the Dead*, delivers a considerably more believable environment.







***Total Vice* is a brutal action-packed arcade title featuring a multitude of enemies to gun down**

King of Fighters '97





Since its release in Japan, the game has seen a revival of the 2D fighting genre

Developer	SNK
Release	Out now (Jap)
Origin	Japan

The latest in SNK's beat 'em up series, *King of Fighters 97* offers players the chance to get to grips with a considerable 29 characters – nine teams with three characters each, and two bosses.

As in previous versions of the game, some of the protagonists have left to be replaced with new arrivals, including Chizuru Kagura, the final boss from last year's instalment.

Because of the significant increase in the game's difficulty, the programmers have decided to regress to a previous playing mode in order to assist casual fans of the series by making the game more immediately accessible to them. As a result, *KoF'97* will feature the same game structure as its popular '94 and '95 incarnations, together with an 'advanced mode' offering new attacks and a power gauge system aimed at players with experience of the '96 version.

Since its release in Tokyo, the game has proved hugely successful, with an increasing number of players abandoning the likes of *Virtua Fighter 3* in favour of more conventional and traditional 2D action. However, that's not likely to prevent the arrival of the Hyper Neo-Geo 64 board (see **E**48) seeing SNK's programmers adding an extra dimension to the inevitable 1998 outing.



***KoF'97* features two play modes giving fans of the series a better chance of survival**

Shiny Entertainment

This cherub image is taken from Shiny Entertainment's forthcoming title, *Messiah*. The game caused quite a stir at the recent E3 show when it was revealed that the player must control a shape-changing cherub – a concept born, surely, of a slightly unhinged mind.

Of this image, Dave Perry, Shiny's president comments, in his own inimitable style, 'The baby is 136,200 faces and weighs in at about 42 pounds with blonde hair, blue eyes and a flair for the dramatic. He's quite possessive, which is often the case for a young cherub aspiring to be an Archangel.' That's that cleared up, then.

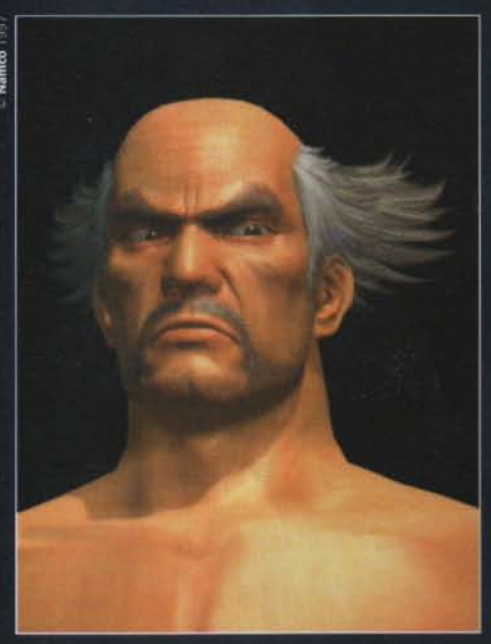
[illegible]

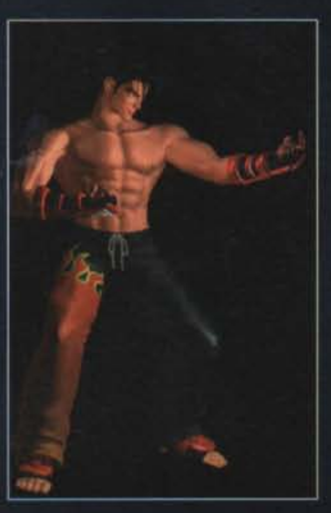
Gallery

While there are many different styles of videogame, so too are there myriad graphical approaches. Hence a Gallery featuring an innocent-looking cherub, a medieval knight, and a cutesy bear-and-bird combo…



This impressive-looking character is taken from Kalisto's ambitious adventure, *Dark Earth* (see review, p80). The French design team responsible drew inspiration from numerous sources, most notably Tolkein's classic fantasy, The Lord of the Rings, hence the passing resemblence to that novel's chief villain, Sauron.









These characters are taken from Namco's *Tekken 3* coin-op, where they feature in the stunning intro sequence and cut scenes. They are (from left to right), Heihachi, Jin Kazana, Ling Xiaoyu and Lei Wu Long. The most remarkable aspects of the rendering is the way Namco's artists have simulated the folds and creases of the silks in Ling's jacket with a detail rivalling traditional illustration methods.

Images rendered on Silicon Graphics workstations by Namco's inhouse graphics artists

This image of a slain knight is a render from Telstar's inhouse PC title, *Siege*. Interestingly, the image was created using NURBS (curved surfaces) instead of polygons. Artist John Palmer used around 20 textures to build up the dirt effect on the armour plating.

Image created by John Palmer on a Pentium Pro PC using *3D Studio Max* and *Adobe Photoshop*



Rare never fails to produce artwork that suggests the colour and enjoyment of its titles, and by extension, the Nintendo brand. Primary colours, cartoon characters and an abundance of foliage have become something of a calling card for the company, since its initial rendering work for the striking *Donkey Kong Country* SNES games

These images are publicity and concept art for the forthcoming N64 platformers, *Banjo-Kazooie* (main) and *Conker's Quest* (top). The palettes, which consist predominantly of bright red, blue, green and yellow, dovetail perfectly with Nintendo's own ubiquitous four-colour logo

Images rendered by Rare's inhouse artists using *Alias 7.1* on Silicon Graphics Indigo and Indigo High Impact workstations

Sega Ages volumes

A new wave of *Sega Ages* releases has been announced for the Saturn in Japan, although there is no news yet of any UK conversions.

To accompany the release of *Sega Ages Volume One* (which is already out in Japan and contains the likes of *Up 'n' Down* and *Pengo*) comes a package of six coin-op conversions: *Samurai* (from 1979), *Sinbad Mystery* (1983), *Star Jacker* (1983), *Ninja Princess* (1985), *Doki Doki Penguin Land* (1985) and, finally, seminal above-viewed driving game *Monaco GP* (1979). Though the collection is mainly made up of obscure coin-ops of old, the games are no more odd than those which feature on some of Namco's more recent *Museum* packs.

Perhaps of more interest to western Sega fans is the announcement of *Sega Ages Columns Arcade Collection*, which gathers together four versions of the once-popular *Tetris*-alike – *Columns 1 & 2*, *Stack Columns* and *Columns '97*.

Hardcore RPG nuts will no doubt salivate at the third planned *Ages* pack: *Sega Ages Phantasy Star*, which pulls together all four instalments of the series which began its life on the Master System.

Finally, Sega has also revealed its latest one-off *Ages* title – *Power Drift* (below).



Leaderboard

Golf remains one of the commonly interpreted sports as a videogame. Edge remembers the genre's true pioneer...

US Gold's *Leaderboard*, released way back in 1986, laid down many of the gameplay features familiar to golf games of today.

Most influential was the title's intuitive control system. Here a two-stage 'energy' bar allowed players to control the strength of the swing, and then give it snap (hook) or draw (slice). At the time, this was the height of sim complexity: controlling snap and draw took real timing skill, and the fact that a full set of golf clubs was on offer to the player meant that most of the concerns of the true player were represented.

Visuals too were impressive for the time, even if each scene did take a number of seconds to draw before every shot. Also galling to today's player would be the rather minimalist courses, which were nothing more than oddly shaped islands, with no bunkers, trees or other obstacles to consider. This did, however, give the game a distinctive, uncluttered style which was eventually modified and improved through several sequels.

Few 8bit games can stand up to the scrutiny of contemporary players better than *Leaderboard*. As one of the first games to realise the potential for multiplayer sports videogaming – paving the way for innumerable football, ice hockey and American football examples – its legendary status is assured.

Publisher: US Gold	1986	No 19
Developer: Access	C64	

Cinematronics Emu

Vector graphics-based coin-ops often bettered their bitmap counterparts in terms of originality, as this emu demonstrates

With *Sparcade* and *MAME* holding a powerful grip at the pinnacle of the arcade emulation scene, other authors have turned to niche areas. One of those is the early vector graphics games subgenre, pioneered by Atari and a US company called Cinematronics. The clean, crisp vector lines and the unusual gameplay of most of the titles drew a substantial audience for the abstract-looking games, and a few enjoyed respectable success.

Practically every Cinematronics game is covered in this, Zonn Moore's fledgling emulator (the Atari titles appear in Neil Bradley's *EMU 2.0* and also in GT's commercial *Atari Collection*), the ones most familiar to gamers probably being the extremely tricky *Star Castle*, tank-based dogfighter *Armor Attack* and the seminal first-person shoot 'em up *Tail Gunner*. There's a lot more to the collection than these, though – *Rip Off* is a fast-moving slant on *Cosmic Guerrilla*, *Barrier* plays like a weird cross between a racing game and an aggressive variant of chess, while in *Boxing Bugs* the player controls a disembodied arm attempting to deflect spiders from a boxing ring.

The technical highpoint is reached in *War of the Worlds*, where giant Martian tripods rendered in full-colour vectors march towards the player's tank.

These games show off some of the most original thinking in game design, even by the standards of the time. It's fun to spot the elements of these trailblazing games that have cropped up in today's hits, but mostly players will get their kicks by simply doing what gamers almost never have to do any more, namely being forced to learn a whole new set of skills and ways to approach a game.

Visit http://www.gamepen.com/gamewire/classic/classic.html to download and track the development of this excellent curio-based emu.



Format:	PC
Publisher:	n/a
Developer:	Zonn Moore
Release:	Out now (Internet)



Cinematronics games (from left): *Boxing Bugs, Star Castle, War of the Worlds, Tail Gunner* and *Sundance*. *Demon, Solar Quest, Space Wars, Speed Freak* and *Warrior* are also available from the emulator's website

DEVELOP

VIDEOGAME DEVELOPMENT UNDER THE MICROSCOPE

Creating and running a game development studio: part one

Not so many years ago the words 'developer' and 'publisher' were almost interchangeable, with hundreds of small companies, each boasting only a modest grasp of financial matters, handling the process of turning an idea on paper into something that could be put on software retailers' shelves. But times have changed. The games industry is now huge, and it's a big-business concern. Many former publishers are now merely working within the industry in a development-only capacity, and the number of viable publishers is dropping all the time amidst multiple acquisitions and harrowing tales of financial ruin. Some would say that becoming a software publisher nowadays requires enough cash to pay off the gross national debt of Mexico.

So, for talented teams that want to get into the industry, but want to avoid joining established developers or inhouse groups, setting up a small studio is really the only way in. While in theory this may sound like an appealing move (enabling relative creative freedom, more power, close team atmosphere, etc), the reality is a lot more complex – especially for the person who puts him or herself into the position of studio head. As **Philip Oliver** of Interactive Studios told **Edge** recently, 'If I had to start up a development house from scratch tomorrow I wouldn't do it. It's just too risky. Simple as that.'

However, such pessimistic sentiments are not universal. As **Edge** reported last month (in The Great Escape), many key game designers are now moving out of huge companies and setting up small-scale development studios.

These more intimate ventures can be hugely attractive to potential publishers – as **Ian Livingstone**, MD at Eidos, opines, 'I'm a great believer in creative autonomy. Small, independent and focused development groups are likely to be highly motivated and driven by their desire to make a hit title. They will have their own culture and identity.' But before getting to the stage of impressing the likes of Eidos, there's a lot of work to be done.

The first element to be considered is who the team should comprise of. Rather obviously, development groups tend to consist mostly of programmers and artists, but there may also be a need for administrators and some form of management on top – an element which has become far more important during the last couple of years. Whereas it used to be acceptable, and indeed almost expected, for the group head to be part of the development talent as a programmer or artist, it's now very impractical, because of all the other matters they will be expected to attend to.

Becoming the primary point of contact for the publisher is perhaps one of the most important of these matters. Despite the fact that one person does not a company make, the studio head will be the development team personified as far as the publisher is concerned, and that person can expect regular visits and 'lively discussions' with the producer. The head will also be expected to keep the team in line, enforce working hours, invoice other companies, chase up invoices when they're not paid, and then chase them again when the creditors start getting heavy. It can prove to be a time-consuming roundabout – which is why precious little in the way of development gets done by the people at the top.



External development teams such as Particle Systems, whose space combat epic *I-War* is being handled by Ocean, are seen as valuable assets by major publishers. Setting up such a team takes plenty of skill and hard cash, though

No matter how little creative input they have, however, it's good practice for the studio manager to have some development experience. That way the manager should know what a programmer's talking about when he asks, 'We've run out of VRAM – should we reduce the number of textures per objects?'

Before anyone can lead a team, though, they have to build one, and this in itself is a formidable challenge. A £500 quarter-page ad in the back of an industry journal is a good place to start, but is unlikely to completely sort out staffing concerns. Good programmers and artists can no doubt be found this way, but an awful lot of applications will be from wannabes who completely lack experience.

Specialist employment agencies have proved their worth time and time again. It's certainly no surprise that unsettled staff register with them – it means no effort on their part whatsoever, except the minor irritation of writing out a CV. The agency then does all the legwork for them, trying to get interviews, etc, and all at no cost. While this may sound charitable, it isn't: their service is indeed free to applicants, but potential employers have to pay a fairly hefty finders fees to the 'middle man'. Sometimes this is on a sliding scale proportionate to the agreed salary of the applicant; in other instances it's a flat fee. A worst-case scenario should see an amount equal to approximately 20% of the employee's salary payable to the agency.

Recruitment is a two-way process, though, and the potential studio head will also have to find ways of tempting highly talented and experienced personnel. Offering benefits and bonuses, for example, is becoming more widespread. Aspects such as life assurance and pension schemes are currently popular, and not too expensive to implement, either.

Often overlooked, but possibly even more important than salary, is the working environment. A great office and top-spec hardware are attractive, helping to lure staff simply because everyone likes decent kit to play with.

It's also important to make sure everyone gets on well with each other. Recruiting a group of brilliant individuals may seem like the way ahead, but if these people can't function as part of a team then little of any consequence is going to get done. As **Gina Jackson**, external development director at Ocean, argues, 'The most fundamental issue when choosing a developer to work with is the feel you get for the team. Will they function as a team due to the long time spans and complexity of development that is undertaken in today's games industry? We can overcome technical and design issues, but once a team structure breaks down it is nearly impossible to retrieve the situation...'

Finding an office in which to house a burgeoning development empire is yet another daunting quest. Open-plan is currently en vogue, allowing for good communication between all team members, but sufficient power sockets and efficient wiring are also important considerations. Time is money, and time without electricity is incredibly expensive. Building a network is also a factor – a few years ago, very few teams in the games industry were networked, but now it's absolutely essential. Which means that another important consideration is how to get all the necessary cables in.

Location is also an issue, but probably for different reasons than might initially be imagined. There's a lot to be said for having fairly low-key premises – no one wants to advertise their presence to burglars, after all. Insurance companies will also be a lot happier to cover a company if it's situated on the first or second floor of a building. Plus, depending on circumstances, the insurer might ask for the company to put bars on windows, and computer workstations in steel cages. This may sound harsh, but processors and RAM are prime targets for theft, and almost every software company will have been hit at some point.

Of course, buying in top-notch hardware for the development team is of prime importance. Shopping around, it's possible to pick up a complete MMX200 PC with lots of RAM, drive space, 3Dfx, etc, for just over £1000+VAT. Adding a good file server will cost just over that amount again. Then, licensed copies of important software are essential. *Photoshop* or *Painter* will clock in at about £400, but again it's possible to shop around, and it's also possible to opt for a site licence. *3DS MAX* costs around the £3,000 mark, and a good C compiler is £300 or so. And it is important to remember that separate copies are needed for everyone who's going to be using them – something that is very much emphasised by *3DS*, which comes with a dongle just to quash the temptation to run multiple copies.

Finally, having assembled a team of keen, dedicated professionals, housed them in a suitable environment, kitted them out with the latest PCs, and furnished them with software, it's actually time to start developing. Which is, of course, where the real work begins...

Next month: How to impress the publisher





***Power F1* from Teque (top) and *Speedster* from Clockwork Games both impressed publishers by conforming to popular genres yet adding innovations**

YAROZE AWAY





While early Yaroze demos have left Edge with the impression that the potential of the PlayStation has yet to be at all realised by hobbyist coders, some of the latest demos from Japan have nevertheless proved impressive, visually as well as technologically.

***Terra Incognita* (above), from Team Fatal, is an action-RPG in true 3D, with the player able to rotate the camera view and zoom in/out of the scenery, so as to make jumps and other tricky moves more negotiable.**

Another, as-yet-untitled, game (below) is an adventure experience reminiscent of the *Alone in the Dark* series.

Both titles use the PlayStation's 3D abilities excellently, and serve to prove that Yaroze development – at least in Japan – would seem to be coming of age. It will be interesting to monitor what the western scene has to offer in response...



(viewpoint)

EXPRESS YOURSELF IN EDGE – WRITE TO: LETTERS, EDGE, 30 MONMOUTH STREET, BATH, BA1 2BW

(email: edge@futurenet.co.uk)

Sad people

I want to make a point to these sad people who claim that you discriminate against their computers – especially Amiga owners. Since day one of your mag **Edge** has influenced my decision about which machine to buy because I believe you have told the truth about the machines' respective development chances and possibilities for the future.

Anybody remember the 3DO? I decided to buy this 'state-of-the-art' machine, but I soon realised that the machine was to be doomed, and I don't blame **Edge** for praising it while warning us that as soon as the Saturn and PlayStation show up and it will be bye, bye 3DO. As fate had it I went out and bought a Saturn and then a PlayStation and love them both. I am really aiming this letter at Gary Pearson (**E**48) claiming that your mag is biased, and I just think that he should go out and buy a PC like all the other cult Amiga fans – believe you me, I have converted a lot of my friends to get rid of their Amiga 4000s to get PCs. The Amiga is dead. So I would just like to say this: read the cover of the magazine for what formats are covered. **Edge** does not cover the Amiga any more because it does not exist any more, and more to the point, when are we going to see the likes of *Tomb Raider* and *Red Alert* on the Amiga? There's more chance of Martians landing.

Terry Burke,
via email

A new generation of games

Sony seems to have been the target of a lot of unjustified criticism lately over the PlayStation's large software library and the poor quality of some of its games. If the PlayStation was severely lacking in quality games or there was little to look forward to over the next 12 months I could understand this attitude, but the opposite seems to be the case. In fact the end of '97 and early '98 looks like being one of the most promising eras for the PlayStation, with a new generation of games that really stretch its capabilities.

The argument seems to be that somehow Sony should be more critical about what it allows to be published on the PlayStation – like Nintendo is. This is totally spurious. Nintendo didn't stop EA from releasing the very mediocre *FIFA 64* because Nintendo needed EA's sports titles. The small number of games available on the N64 is not due to any quality issue – most thirdparty efforts are mediocre or dreadful. Surely it's more a case of publishers taking advantage of the Nintendo 64's small software library and a large US userbase desperate to buy software?

I think Sony's strength in the market has been the accessibility of its hardware, and the relatively publisher-friendly business model. It is this which has resulted in the large number of PlayStation games available. Of course a significant proportion of releases are dross, but is this any different from any other media sector? Or videogame sector for that matter? The increased competition in the PlayStation market should help to improve quality, discouraging publishers from releasing any old tat, while the PlayStation's publishing business model should promote innovation (would Capcom have bothered with *Resident Evil* if the perceived risks were too high?). The operative word here is 'should', but I would rather trust market forces determining which games are released than a paternalistic console company. Think about what games we would have lost if Nintendo had been the only viable games publishing platform for the last ten years.

Nintendo's advantage over every other videogame publisher is that it rarely seems to release anything other than quality games, regardless of what this costs in development time. This is not just down to Miyamoto's talent, but seems to be a fundamental company policy. Where Sony does deserve to be criticised is that with the exception of SCEE, such a profitable corporation, does not have the guts to follow suit.

Gary Moran,
Birmingham

Nintendo's argument is that by flooding the market with substandard software, Sony is confusing and disillusioning the consumer which could have widespread repercussions for the industry as a whole. A parallel could just about be drawn with Atari's non-regulation of the VCS cartridge market back in the early '80s, when consumers eventually rejected the majority of substandard software that was on the shelves and the market collapsed. Cynics would argue, of course, that this is little more than a shallow ploy by Nintendo to disguise an undernourished software line-up, but the dazzling quality of many N64 releases indicates otherwise. Unfortunately it's not fair to compare games with other media sectors because the average unit price is so much higher. Sony is aware of this and should strive for fewer releases of a higher quality.

Dear Mr Yamauchi

This is a letter I would like you to pass on to Nintendo in Japan:

Dear Mr Yamauchi,

What I don't understand – and correct me if I'm wrong – is why your company doesn't just stop the pretence and come clean. If Nintendo really only wants to sell to its Japanese customers, if it really only wants to make all new game carts available to its Japanese customers, then please just have the common decency to let the rest of us (ie anybody with an N64 not resident in Japan) in on the news.

Here in the UK there are so few game carts available for the N64 it's got well beyond a joke. As a once-proud N64 owner I'm seriously thinking of crossing to the 'dark side' – ie buying a Playstation. I sang the praises of your N64 console, I trumpeted its advanced graphics-handling, the promise of a more immersive gaming experience, the dawn of a new generation in consoles – and then I played *Shadows of the Empire*. LucasArts' pitiful experiment in tediousness pales next to the other suspects: *Turok* (monotony coded), *Super Mario 64* (eye candy for the undiscerning), *Mario Kart 64* (see previous). Where are the much-vaunted, often promised, still-to-be-seen *Lamborghini 64*, *Star Fox 64* and *Extreme G*? Where, in essence, is the slightest suggestion of a game worth having? (Answer: it's out now in Japan.)

I'm 34 years old. My age is irrelevant except in one vital respect: I am employed, I have a relatively good standard of living and, yes, I have just what Nintendo is after: I have an N64 and I've got some disposable income. I can afford £65 a cart. Trouble is, Nintendo seems to want to market every game at the age-5-and-unders, with tiresomely cute characters and a deplorable lack of seriously themed software (cue several successful, even classic, PlayStation titles with not a cute character in sight, just guns, gore, racing, chasing, explosions and general all-round mayhem). Nintendo? Anyone listening?

As an exercise in textbook marketing disasters I think Nintendo might be going for a personal best with the N64. Not satisfied with alienating a great proportion of its adopters with the cynical price drop so soon after launch, it is now rubbing salt into the wound by enforcing (some might think with spite) an interminable games drought on Europe's N64 owners.

I know I have two choices: a) I can move to Tokyo and be on the cutting edge of all the latest software releases two years before they're ever likely to see shelf space in Electronics Boutique on Oxford Street, or b) I can bin my N64 and get a PlayStation. Hmm...

Phil Ford,
address withheld

As far as 'marketing disasters' go, the Nintendo 64 much be one of the world's least effective examples, given that the machine has sold many millions of units worldwide, and plays host to some of the world's best videogames – in fact, arguably more 'games worth having' than in the PlayStation's entire 800-game catalogue. But **Edge** would agree that the situation in the UK isn't ideal and can only suggest that you look to the import market for a solution. With each new console that Nintendo releases, one thing has remained constant: Europe is always going to be a less important territory than Japan and the US.

Two completely different games

I cannot understand how Jasper Manchipp (Viewpoint, **E**48) can try to compare *Mario Kart 64* and *Rage Racer* – they're two completely different games. Sure, they're both racing games, but there the similarity ends. The 'cartoon-style' graphics are entirely appropriate to the *Mario* ▶

universe: to try to make them look real (ie similar to *Rage Racer*'s graphics) would be to miss the point. The original *Super Mario Kart* was not about realism, it was about *fun*, and the sequel is the same. Why else would Nintendo include power-ups such as shells to lob at your opponents? *Rage Racer* is indeed a great game, but for obviously different reasons, and so the games suit different tastes.

If you want an arcade-style racer with breathtaking scenery and speed, you go for the PlayStation game; if you want an accessible, fun game you can play with three of your mates, the N64 game is the best choice. Jasper would be better advised to compare upcoming N64 games such as *Multi-Racing Championship* and *Rev Limit* with *Rage Racer* (he'll find the PlayStation game comes off very well, although this is partly due to the developers still being a long way from getting the best from the N64, as **Edge** pointed out). Oh, and as for demonstrating 64bit power, I was pretty impressed to see *Mario Kart 64* running four windows simultaneously at virtually the same speed as the oneplayer game, and with no visible loss of detail. Let's see a PlayStation do that.

Derek Littlewood, Coventry

Last month's letter was printed because it highlighted the impact both games would have on the uninitiated, casual observer, Nintendo's 64bit game failing to match the visual punch of a supposedly inferior machine. That much is true in terms of *Super Mario Kart 64*, but **Edge** would agree with your comments relating to each games' respective design strengths.

'Saturn is not our future'

Congratulations to Sega for letting down its console owners yet again. Comments made at E3 of 'the Saturn is not our future' nature will effectively seal the console's fate of a premature end. It seems that Sega, having seen thirdparty developers abandon support for the console, has decided to do the same. Halving the number of games in development (supposedly to concentrate on quality) underlines Sega's attitude, and it's obviously just so that it can allocate more development resources to its next console.

I would not be bothered by the lack of support if the Saturn was not capable of meeting the demands of the hardware requirements for the current levels of games. But as the games company Lobotomy is demonstrating in its conversions *Duke Nukem* and *Quake*, the Saturn can do outstanding games if the effort is put in.

Thirdparty games companies are abandoning support for the Saturn simply because they think their chances of making a profit are better on other platforms (because of their market share/potential share).

The reason that games companies target a platform with a large market share is that they know a large percentage of owners do not read game reviews before buying a game, and therefore have a greater chance of selling substandard software.

Any other reason (for not supporting the Saturn) given by games companies are ridiculous. I'm sure that any Saturn owner would not mind waiting a while longer for a game to be released on their console rather than not have that game released at all. If Sega is not careful in the future its fate could be the same as Atari's – it once had a successful arcade division as well!

Philip Carlin, Wolverhampton

Of course a large market share is the most important thing – game magazine reviews only count for a percentage of overall sales. But you're forgetting that one of the major factors in companies abandoning Saturn development is the lack of a smooth conversion process, due to the machine's intricate architecture.

If PC or PlayStation code could be easily ported to the machine without the need for low-level coding (necessary for efficient 3D) then there would be less of a drain on a company's resources.

I myself am prepared to wait

It strikes me the problem for the Nintendo 64 at the moment is not that developers are incapable of producing quality software for it, but how long it seems to take them. The 32bit systems get their killer apps out quickly because most of them are just coin-op conversions (three *Ridge Racers*, three *Virtua Fighters*, etc), but Nintendo hasn't got the arcade background.

Super Mario 64 was supposedly in development for nearly five years, and five of the games that were shown back at Shoshinkai '95 are still not complete. In fact, all five of them were still not in playable form at the same show the following year. Release dates for N64 titles seem to slip back every time new dates are posted – these games are becoming as elusive as the hardware itself once was. I myself am prepared to wait, but others may not...

William Lepel, address withheld

While the expansive nature of many N64 releases (*Super Mario 64*, *Turok: Dinosaur Hunter* and *GoldenEye* being good examples) is often in stark contrast to supposedly equivalent titles on 32bit consoles, this has quite clearly taken its toll in development terms.

Nintendo's commitment to quality has caused a shortfall of N64 software, but it's doubtful how many game players would prefer a greater number of lower quality titles.

Perhaps the shortage lies with developers capable of creating titles of this quality – a factor that Nintendo itself can hardly be held liable for, obviously...

(QandA)

SEND QUESTIONS TO Q&A, **EDGE**, 30 MONMOUTH STREET, BATH, BA1 2BW

Q **1.** I have decided to buy a 3Dfx card for my 166MMX PC. Unimpressed by the pack-in games I was beginning to question the wisdom of selling my PlayStation to raise cash for my new PC. That was until I bought *Moto Racer*, which put to rest all my fears. Running in 640x480 with bilinear filtering, the 3Dfx card provides graphical detail far outstripping anything the PlayStation could ever hope to reproduce. However, I wonder how the card compares to the N64 in polygon counts, texture ability and resolutions?
2. Now that Sega is a sizeable shareholder of the 3Dfx company, can PC owners expect D3D (or, better still, 3Dfx-native) conversions of its arcade games?
3. Have you heard any more information about 3Dfx's next-generation card, formerly known as Banshee?

Matt Waters, Salisbury

A **1.** Bearing in mind that the standard 640x480 resolution of the 3Dfx Voodoo card is substantially higher than the N64's most commonly used mode of 256x224, the chipset is already handling more work. When written to the metal using 3Dfx's own Glide API, the board can process around 250,000 polygons per second, which is substantially more than Nintendo's console.
2. Given Sega's recent turnaround (see News), 3Dfx-native versions of its arcade titles seem unlikely. However, the company does have plans to support 3D accelerators for some of its forthcoming software, and while it currently has an allegiance to PowerVR, Direct3D is likely to feature in the future. Next issue, **Edge** meets the R&D division within Sega Japan to discuss its plans for the PC market.
3. Given that the company is due to float on the US stock market soon, Banshee information is scarce. Expect performance of the chipset to be at least three times higher, though, and probably with a price to match.

Q I own an American N64 and sometimes I can see fine lines in its graphics. In *Turok*, for instance, with the T-Rex boss you can see the fine lines in its red laserbeam, but especially with *Star Fox 64*, in the entire level of Aquas. Do you know if there's anything wrong with the machine or the games, or is this normal?

Dennis Schouten, via email

A There is nothing wrong, technically. **Edge** has noticed fine lines in the graphics of some parts of *Star Fox 64* but expects that this is simply a graphical technique used to minimise the amount of work done by the graphics processor, missing out alternate scanlines.



CD2

Next month, Edge celebrates its 50th issue at the forefront of the interactive entertainment industry. Casting an eye over four years of relentless change, the magazine will be considering the most significant developments in the industry, as well as highlighting the biggest successes (and the most embarrassing flops), to deliver a true gauge of the speed of transition the 'next generation' of videogaming has commanded.

As well as exclusive reports from Shiny Entertainment in California and Sega's PC development HQ in Tokyo, E50 also presents the second in its series of PC/Mac CD-ROMs previewing a diverse and exciting selection of titles for the PC, consoles and the arcade.

issue fifty

on sale September 12










.uture.

ON
WC2H 0EA
287 1041

INSIDE ISSUE 49

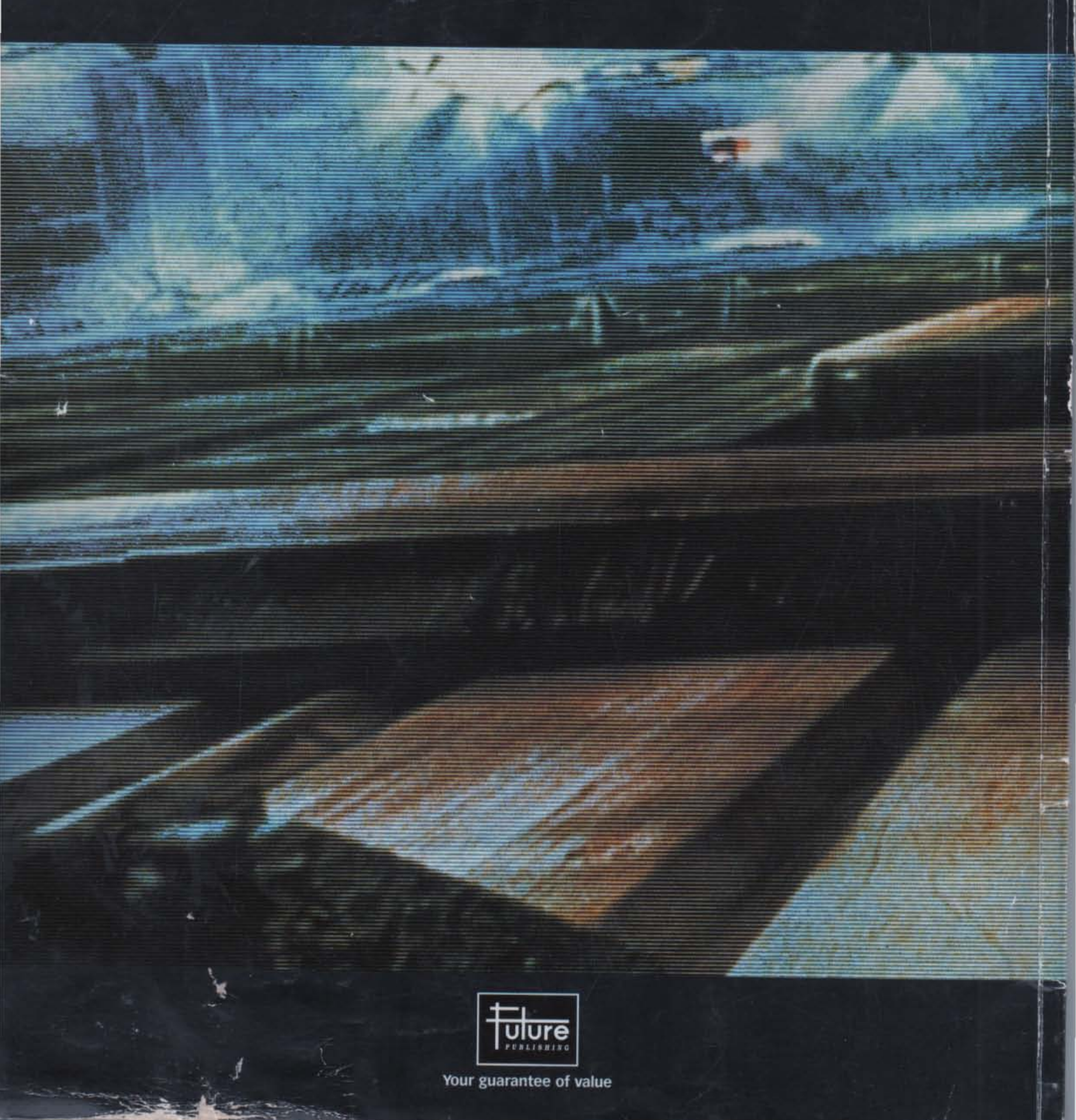
Prescreen

Judge Dredd • The Fifth Element • Powerslide • Buggy • Respect Inc • Colony Wars

Testscreen

Street Fighter EX • Last Bronx • Multi-Racing Championship • Dark Earth • Dark Rift

Extreme Assault • No Respect • Actua Golf 2 • Toshinden 3 • Atomic Bomberman



Future Publishing

Your guarantee of value